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INTERNATIONAL ASPECTS OF THE AGRICULTURAL ADJUSTMENT PROGRAM

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The agricultural adjustment program, and one may add its half-brother the national recovery act, are distinctly nationalistic in their tendencies. If they are carried to their logical ends, this country will approach a remarkable degree of self-containment.

It is not likely that we will retreat behind frontiers to the extent of being independent of goods and services from other lands, and independent of the need for supplying goods and services to "foreigners." Nevertheless, it is not at all clear that the policy of government may not go so far in this direction, as to make it difficult to promote international economic intercourse. National self-containment has for one of its purposes the boosting of domestic price levels above world price levels. This is not conducive to the conduct of foreign trade. Sellers from abroad must not be permitted to enjoy the benefits of the high domestic price level and foreign buyers are not interested in paying more than world prices. At best, economic nationalism injects jarring ingredients and off-flavors into the international diet.

First let us consider certain phases of the present policy of gearing production to domestic demands. Our country is not alone in this practice. The world is now indulging in a nationalistic spree unequalled during the past one hundred years. Commercially, nations are attempting to withdraw within their shells.

The mad rush of nations to become more and more economically self-sufficient is a matter of common knowledge to the reading public. International trade barriers are rich in variety, extensive in number, and devious in their applications. The tariff, with all of its honors of age, and the respect accumulated by many years of past performances, has been found wanting. The patient con-

tinues to decline in spite of the administration of ever increasing doses. This first aid treatment has been supplemented with all sorts of other concoctions. The practice of "stretching" is widespread. Many countries compel the use of large percentages of domestically grown commodities such as potatoes, rye and rice in the manufacture of flours containing foreign wheat. Some countries, during certain seasons of the year, do not permit the use of foreign wheat in the manufacture of flour. This practice may easily amount to an embargo. Another barrier widely adopted is the import quota. It may limit imports to specified amounts from designated countries. Closely associated with the quota system is the licensing of importers whereby the government has complete control over the amounts of foreign goods admitted, and it may also exercise a choice of their sources. Perhaps the most vicious throttle on foreign trade is the government monopolization of the sale and purchase of foreign exchange. Through the control of foreign exchange a state may regulate not only the amounts, but also the variety of the foreign purchases of its inhabitants without the handicaps of an announced public policy.

Apprehensions as to the success of these measures are based upon the simple logic that if national isolation were a cure for the depression, the world should now be on the high road to a perfect state of economic health.

What are the reasons for this abhorrence to the purchase of foreign goods? Perhaps the most outstanding has a military background. Raw materials, especially, play important roles in schemes of national defense. People still have vivid recollections of the sacrifices made during the recent war as a result of the lack of these materials. The progress of the disarmament conference does not serve to dispel these fears.

It is held in prominent quarters that international trade fosters war. A considerable group holds that all modern wars have their origin in an attempt to capture new markets or to retain old ones. But opposed to this idea is the contention that the monopolization of the supply of raw materials by one or a few nations is far more likely to give rise to armed conflict than does international trade in these same materials. In this connection, it is interesting to note that one of the first activities inaugurated by the League of Nations after its founding was a world survey of raw material supplies. The League held that the access to and a reasonable distribution of these were essential in the maintenance of world peace. The author is inclined to accept this view.

A feeling of national security must be re-established in the

world. Without it the question of nationalism ceases to be an economic issue. If self-preservation becomes the dominating force, we may drop back to an era of past centuries. One hesitates to accept the view that civilization is unable to create other alternatives.

Another impetus to the growth of trade restrictions arises out of the fact that import barriers on the part of one nation reduce the exports of another nation. That is, the imports of one country are the exports of another. Nations with declining exports find it necessary to reduce imports in order to reduce unfavorable trade balances. The simplest way, or at least one receiving hearty support, of reducing imports in industrial countries is to grow more foods at home, even at high costs, and thus eliminate the necessity of foreign purchase.

A group of the eastern European nations emphasized this point in their demands for preferential tariff treatment by western European countries. They said that if the western industrial nations did not take their agricultural products at remunerative prices, they, the eastern agricultural nations, could not import manufactured goods, and from necessity would have to set up manufacturing establishments within their own border to supply their own needs. This is a good example of the results of national isolation. The attempt of industrial Europe to grow food at high costs may force agricultural eastern Europe to manufacture at equally high costs. Each group is attempting to perform tasks for which it is ill adapted. Were there an exchange of commodities, both groups would have more of the things both needed. As one speaker so aptly observed, international trade furnishes,

> "... the means whereby people everywhere may benefit by the division of labor, each portion of the earth producing what it is best fitted to produce and exchanging it for other products from all parts of the world. Only thus can the standard of living in any country reach its potential maximum.'"[1]

Yet in the face of this generally recognized trueism, each month adds to the barriers erected against world commerce. Protection is contagious. It is both a disease and a vaccine against the effects of the disease. A nation fights protection with protection. It becomes a mad race, futile to be sure, but a race none the less. One hope is that it may fall of its own weight.

Another incentive toward nationalistic practices lies in the fact that most governments are striving to protect their agriculture

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[1] "Agricultural World Economy," by Wallace McClure in National Policies Affecting Rural Life. Proceedings of the XVI Annual Country Life Conference, Blacksburg, Virginia, 1933. p. 120.

against the ravages of this depression. This comes in part, from the widespread feeling that the welfare of agriculture is closely associated with the welfare of the nation as a whole. To many a declining agriculture is looked upon as a warning finger pointed toward a decaying nation.

From what has been said, one can readily see that the task of re-establishing a system of world economy is not a simple one. On the other hand, the arguments for increased commercial intercourse among nations are many. Let us examine some of them with especial reference to American agriculture.

In discussing the issue of nationalism in its relation to American agriculture, this article refers to that phase of the term which has to do with the tendency in this country to become more independent of foreign outlets for its own goods on the one hand, and more independent of the need of foreign goods and materials, on the other hand. It is not assumed that anyone believes that it is possible or desirable to become entirely independent of foreign sources. Likewise, it seems impractical to advocate entire freedom of trade or a complete return to a system of laissez-faire competition. It is more profitable to discuss the situation as it exists. Broadly speaking, it will be agreed that recent important and widespread activities of this government possess distinctly nationalistic flavors.

The agricultural adjustment act is pledged to raise prices of farm products to their pre-war purchasing levels. It is reasonable to assume that if the act is successful the domestic price during its operation will be above world price levels. Furthermore agricultural production is to be reduced to a point approaching domestic requirements.

The industrial recovery act is designed to raise wages, and through the increased purchasing power thus created, to raise prices. If prices are raised above world levels, sales abroad are hardly possible.

This is the nationalistic side of the picture. The other side is, that one cannot look to the old system of competition for relief. Competition has developed much costly friction. In some cases, it fails to work or works badly. Hence, it is not a question of whether or not there shall be instituted controls over our economic activities, but rather, is it a question of how much control and what direction it shall take. These controls might well create conditions favorable to the promotion of foreign trade. The fact remains, however, that outstanding examples of present day na-

tional planning have a distinctly domestic bent. One needs only to observe what is transpiring in Russia, Germany and Italy. The probable reason is that the supreme leaders in these countries feel that they can shape domestic destinies to a degree impossible when dealing with international forces.

First let us look at the near impossibility of approaching economic isolation. Few appreciate the extent in which nations are dependent upon each other.

In this connection, I cannot refrain from mentioning an incident related by Professor Gay of Harvard.[2] It came to his attention that the financial position of a firm in the eastern part of the United States was endangered because it was unable to collect considerable sums owing it by a firm on the Pacific Coast. The western firm could not pay because it was unable to collect from a company in the Malay States. The Malay States concern was in difficulties because its tin mines could not compete with the tin mines of Bolivia. Hence a commercial house in the United States, which in all probability had little direct connection with tin and no conscious concern of Bolivia, was becoming bankrupt because of the price of tin in that country. The advocate of isolation may say that the eastern firm reaped its just desserts. It should not have been entangled, even indirectly, with foreign alliances. The answer is, that in all probability, neither the eastern nor western firms would have existed at all were it not for these devious connections.

Many take the position that since the exports of the United States seldom exceed 10 per cent of their total production, why worry about the one-tenth, why not develop the nine-tenths. This attitude entirely overlooks the fact that this one-tenth may exert an influence upon prices wholly out of proportion to its size. It may mean the difference between profit and loss on the nation's industrial and commercial balance sheets.

Let us look upon this 10 per cent from the standpoint of its importance to certain agricultural commodities and certain industries. In this light, exports assume more significant aspects.

Ordinarily half of our cotton goes abroad; one pound out of every three of our tobacco reaches a foreign market; one bushel out of five of wheat was in normal times shipped overseas; and one hog in every ten, plus the lard from every third hog, is customarily sold in foreign markets.

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[2] "International Aspects of the Depression," by Edwin F. Gay in *Aspects of the Depression*, edited by Felix Morley. University of Chicago Press, 1932. p. 31.

The following industries exported the designated per cents of their total physical production in 1914 and 1929.[3]

Industry	*Per cent of Production Exported* 1914	1929
Motorcycles	10.5	50.0
Tobacco	47.2	41.2
Typewriters	36.9	41.5
Copper	54.8	36.4
Kerosene	52.2	35.4
Lubricating oils	37.1	31.0
Printing machinery	18.0	29.4
Sewing machines	31.8	29.8
Agricultural machines		23.2
Business machines	14.3	23.3
Locomotives (steam)		20.8
Passenger cars and trucks	4.5	10.1
Gasoline and Benzol	17.6	13.8

Something like a million men in this country directly employed in foreign trade in 1929 are now out of work.[4] The possibilities are not bright for the fruitful absorption of these workers in a system of economy based upon an isolation policy.

So much for exports. The welfare of the United States is equally dependent upon imports. Their importance to the economic life of the country is shown by the fact that the[5]

Automobile	industry	draws	its	supplies	from	18	different	countries
Bakery and confectionery	"	"	"	"	"	28	"	"
Beauty shops	"	"	"	"	"	17	"	"
Clothing	"	"	"	"	"	21	"	"
Electrical	"	"	"	"	"	17	"	"
Furniture	"	"	"	"	"	25	"	"
Grocery	"	"	"	"	"	21	"	"
Hardware	"	"	"	"	"	25	"	"
Jewelry	"	"	"	"	"	26	"	"
Leather	"	"	"	"	"	22	"	"
Radio	"	"	"	"	"	16	"	"

Industrially and commercially, this country can become more independent of the supplies of other nations if its people are willing to make drastic adjustments in their manner of living. The possibilities in this respect are about the same, one imagines, as those of a middle western farmer who attempts to rely upon his own farm for the direct satisfaction of most of his material wants.

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[3] *Commerce Yearbook*, 1932, Volume I, p. 95.
[4] Radio discussion by Willard Thorp published as Radio Discussion No. 3 of the "America Must Choose" series by the Foreign Policy Association, page 7. (Delivered March 29, 1934)
[5] National Council for the Prevention of War. World Maps of American Finance and Industry.

It can be done. But in so doing, he must be prepared to give up many of those things that he had long believed to be necessities. Many of his simple desires would go unsatisfied. His standard of living would drop to the level of the pioneer age. The hardships of the frontier would return. Sacrifices would be great.

But one may object to this line of reasoning on the grounds that the nation as a whole has a far greater variety of resources at its command, in adequate quantities, than has the average farmer. This is true, but the more one studies the question, the less is his assurance that the country as a whole would not find itself surprisingly lacking in many of its everyday essentials. Few realize the extent to which a nation such as ours draws upon the rest of the world for what are looked upon as common necessities. For instance, rich as are the mineral resources of this country, one is told that it must depend upon outside sources for some 15 minerals which are indispensable in the manufacture of such common articles of use as an automobile. It is also said that the construction of seemingly insignificant items such as a telephone receiver, calls for nearly a score of imports from almost as many countries.

For this country to attempt to attain a state of happy isolation is somewhat like a hermit looking for a cave on Broadway. He may have found it two hundred years ago. But the march of time has destroyed the possibilities of its restoration. To be sure, through great efforts it is possible to approach a degree of less dependence upon the rest of the world. But the price will be high and the burdens heavy.

Let us examine the cost of some existing nationalistic measures. It is estimated that the sugar duty imposed by the tariff of 1930 cost the consumers of the United States annually around $268,000,000[6] in the form of increased prices. Beet and cane growers in continental United States received, in all probability, around $53,000,000 in benefits.[7] This amount goes to the growers of products which account for less than one per cent of the total farm income. The extra cost to the farm population alone is probably greater than benefits received by this small segment of it.

The Federal Department of Agriculture estimates that the world 1931-32 wheat crop, excluding Russia, was at least 225,000,000 bushels larger, and that world consumption was at least 175,000,000 bushels smaller because of the action of governments in maintaining domestic prices above world levels.[8] With

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[6] Ellis, Lippert S. *The Tariff on Sugar*. Rawleigh Foundation, Freeport, Illinois, 1933, p. 152.
[7] Ellis, Lippert S. *The Tariff on Sugar*, p. 152.
[8] 73rd Congress, 1st session, Senate Doc. #70, World Trade Barriers in Relation to Agriculture, p. 8.

respect to tobacco, it is estimated that foreign trade restrictions have displaced from 100,000,000 to 150,000,000 pounds of exports annually from this country.[9]

It has been authoritatively estimated[10] that the average Italian family of father, mother and three children under twelve eat around 33 bushels of wheat per year. The increased cost of that wheat due to the present tariff in Italy of something over one dollar per bushel may be conservatively estimated at $30.00. The average yearly wage of the industrial worker is less than $300.00 per year. That of the agricultural worker in Italy is less than $200.00. Hence the increase in the price of bread due to the tariff alone is 10 per cent of the yearly wage of the industrial worker and more than 15 per cent of that of the agricultural laborer. This is a heavy load to carry in the name of nationalism.

The world presents the sorry spectacle of subsidizing wheat reduction in this country to the tune of 7,800,000 acres for the present crop year, while Great Britain subsidizes her growers to produce more wheat by guaranteeing a minimum price of around $1.30 per bushel. This is considered the indispensable cost of production. Likewise, France guarantees her producers a minimum of $1.65 per bushel beginning July 15, 1933 and advancing to $1.89 per bushel for the period July 1 to 15, 1934. Italy by high tariff protection and various subsidies embodied in her "Battagalia del Grano" strives to become self-sufficient in wheat. Even little Switzerland is trying to turn her mountain sides into wheat fields by setting a price to growers in the neighborhood of $1.90 per bushel.

Not long ago, some 6,000,000 pigs were smelted down in this country. Germany by exorbitant tariff measures amounting as high as 15 cents per pound on lard, has boosted her domestic price for live hogs to over $15.00 per hundred pounds—something like five times the price obtaining in this country. Great Britain is subsidizing hog production on the basis of feed costs. Both Holland and Denmark, her near neighbors, are subsidizing hog reductions.

Truly this is a queer world. Some nations are excited over the pressure of the population on the food supply; others are worrying about the pressure of the food supply upon the population. The attempt to create abundance through organized scarcity on a wide scale is new in the history of the United States.

It is held by some advocates of economic self-containment, that

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[9] Ibid.

[10] Adapted from figures contained in an article by Gaetano Salvemini, "Mussolini's Battle of Wheat." *Political Science Quarterly*, March, 1931. pp. 25-40.

modern processes and improved technique are sufficiently widespread to permit mass production in most countries and climates with equal efficiency. This view overlooks important considerations such as custom, tradition and aptitudes of the peoples. It overlooks also, the vital necessity of a vast market demand in order to make mass production feasible. For instance, it is this wide scope of the home market for automobiles that makes possible the modern assembling lines in this country. Should not American manufacturers look forward to supplying some of the automobile needs of those countries where the assured domestic demand is too limited to permit such efficient production practices? To protect its automobile industry against the advantages of the American producer, Italy recently announced an import duty of roughly a dollar per pound. This is something like four times the price of American cars in the United States.

Economic self-sufficiency is based upon national planning to a degree never before known in this country. It requires centralization of power and mass regimentation of producers. In Russia, Germany and Italy one notices a distinct similarity between industrial and commercial controls and the principles of military organization. The army is probably the best example of a planned society. Planning to the extent carried on in these countries is not possible under a system of freedom of discussion. National planners must not be disturbed by the confusion of debate. Furthermore, planning assumes the ability to govern to an extent never exercised in this country. American politics has seldom, if ever, displayed the degree of intelligence, consistently applied, required to discharge successfully this task.

The agricultural adjustment program is no mean example of national planning on an ambitious scale. It started on a voluntary basis. If the developments with respect to cotton are an indication, it promises to become compulsory. None will deny that it is nationalistic. The program is put forward as an emergency measure. This temporary expedient must be replaced with a more permanent structure. Hence, is it not timely to ask: Where do we go from here? Whither bound? or What is to follow?

If one is to choose a successor for the present program, it is well that the merits of its plans and the results of its operations be carefully weighed. With this in view, it may not be amiss to pause briefly to review some of the outstanding characteristics of the agricultural adjustment portion of the farm relief act.

In the farm relief act, agriculture has an entirely new legislative costume, something different than it has ever worn before.

It is designed to restore pre-war purchasing power to the agricultural classes. In other words, the administration, through this act, is pledged to raise the price of a bushel of wheat, a pound of cotton, and a hundredweight of hogs, for example, to a level that will enable these commodities to exchange for as much of the things which the farmers buy as they did before the war. This goal is often referred to as pre-war "parity" prices.

Admittedly, the securing of a pre-war "parity" is no small task. The road is long, and if the past year may be used as a guide, it is a difficult one. The agricultural adjustment administration began its existence in May, 1933. During that month farm purchasing power was 61 per cent of its pre-war level. One year later—May, 1934—it was 61 per cent of that level.

It is true that farm prices during the year just passed have increased from 62 to 74 per cent of their pre-war levels, but during the same period the prices of the things farmers buy have increased from 102 to 121 per cent of those obtaining, on an average, during the period 1909 to 1914. Hence farm prices have no more than kept pace with the prices of the commodities which farmers buy. It rather looks as if General Johnson has been quite as active with his NRA as has Secretary Wallace with his AAA. On the other hand, it must be recognized that the duration of the experiment is entirely too short in order to furnish a reliable base for definite conclusions.

Pre-war purchasing power for agriculture is the goal. The agricultural adjustment program is the machinery with which the government is attempting to reach this goal. The principal characteristic of the program is its flexibility. Its operation, within broad limits, is left to the discretion of the Secretary of Agriculture, operating under and with the approval of the President. Seldom, if ever, in peace times, have we given the officials of this government such broad grants of power as is conferred upon the Secretary of Agriculture by the farm relief act. As an example of some of his more important powers, he may adopt any or all of the following lines of action:

1. Deal in cotton futures
2. Lease land
3. Restrict production (allotment)
4. Restrict amounts coming to market
5. License and supervise the activities of processors and distributors
6. Purchase surpluses
7. Levy processing taxes in amounts of his own setting

This is a sort of land, water and air attack combined. The Secretary of Agriculture has exercised all these powers. They are recited in detail in order to point to the red thread that runs through the whole fabric: *the creation of value through scarcity.* The government is encouraging farmers to cooperate in growing less and less with a view to receiving more and more.

As an emergency measure, as a temporary expedient, we may accept the agricultural adjustment program. But it is not conceivable that the people of this country will choose to pursue for any considerable period, a policy which takes out of cultivation the good lands with the poor lands, which reduces operations on low cost farms to the same extent that it reduces operations on the high cost farms. Nor do I believe it to be to the nation's advantage to continue a reduction program which applies to efficient farmers in the same manner and in the same degree as it applies to the inefficient farmers. The traditions of the American farmer do not admit of the continuation of a policy which freezes the "status quo"; which does not permit a young farmer to start small and grow large; and which does not sanction development. Furthermore, it is difficult for some of the more conservative of us to substitute a national philosophy of *prosperity through scarcity* for the old axiom *comfort through plenty.* The author is wholly unable to accept the thesis that the agricultural depression can be banished through the restriction of production. We are large consumers in the United States because we are large producers. No nation can consume more than it produces. Less production means less consumption. Less consumption means a lower national standard of living. Can agriculture long prosper in the face of a declining national standard of living? It never has.

In emergencies, however, nations are forced to resort to unusual measures. Strychnine may save life in a crisis if administered in proper amounts at the proper time. It will not support life. Restriction of production may be the strychnine in this agricultural crisis. It cannot be looked upon as a regular diet. However, there is little need of emphasizing further the temporary nature of the present program. The Secretary of Agriculture, himself, and the agricultural adjustment administration as well, have repeatedly stated that this program is looked upon as a passing one. It is a bridge over the gap between the depth of the depression and the establishment of a more permanent national structure for agriculture. As such, the program with all its Aladdin's lamp philosophy is being accepted.

Even though the efforts of the government are successful, the temporary nature of this emergency measure brings up that all important question "What is to take its place?" By law the processing tax is abolished when prices reach pre-war parity. When the processing tax is dropped, presumably benefit payments will cease. Without benefit payments, the program as we now know it will evaporate. On the other hand, one doubts if any believe that the government can cease its present activities without substituting something in their place. This adjustment program is the proverbial bear which agriculture has by the tail and cannot let go without serious injury to itself unless and until machinery for subduing the animal is provided. Should the government release all control of the 40 to 50 million acres formerly under cultivation with prices at pre-war purchasing levels, it is safe to assume that most of these idle acres would be under the plow in a year or two. Egypt furnishes an indication of this possibility. For a number of years there have been restrictions on cotton planting in that country. Recently these were removed. The area planted to cotton increased 60 per cent. Should we immediately crop our idle contracted acres, we would again be faced with the same old threatening surpluses and start anew on the same old unfortunate cycle. Is it not obvious that these temporary expedients must be absorbed by plans and policies of a more lasting nature? It may not be amiss to invoice some of the so-called long time plans now in operation or under consideration.

Under the provisions of the national recovery act, there was created in the Department of the Interior, a Division of Subsistence Homesteads, with a fund of $25,000,000 for experimental work in the field of a "planned redistribution of population." Broadly speaking, the thought is to provide the machinery whereby the seasonal and part-time industrial workers may acquire small agricultural holdings. While this plan, if successfully carried out, may increase markedly the well-being of the industrial worker, it offers little in the way of assistance to agriculture. It will tend to restrict the agricultural market by decreasing the agricultural purchases of the part-time industrial homesteader.

The Division contemplates[11] also, giving attention to "stranded" agricultural communities by assisting farmers on poor soils in isolated communities to relocate in a more promising environment. This also is commendable. It fits in nicely with the

[11] The Subsistence Homesteads Division set up a corporation to deal with stranded rural communities. It now looks as if this phase of its work would be handled by the federal relief administration.

zoning movement now in progress in some states. But like the industrial homestead, it will not materially improve the agricultural situation of the nation as a whole. If anything, it will tend to increase agricultural production by placing farmers now on marginal soils, on better and more productive lands.

Another proposal receiving widespread consideration, with assured federal financial support, is the purchase by the government of marginal and submarginal lands. The thought is to retire from farm use areas not adapted to cultivation. This is fine. It is a constructive policy. But it will, even though applied on a wide scale, have little effect in reducing production. It has been estimated[12] that the farms selling less than $600 worth of products per year amount to 28 per cent of all farms, but these same farms account for less than 3½ per cent of the nation's farm products entering commercial channels. In other words, if the government started to buy land beginning with the poorest land in cultivation, it would have to buy out about 1,700,000 farmers in order to reduce the marketable supply of farm products about 3 to 4 per cent. If the aim were to reduce the marketable supply by 11 per cent, it would have to buy out 49 per cent of all farmers, taking all who sold less than $1,000 worth of products a year.

A plan designed to remove poor farm lands from farm use merits most serious consideration as a program that can stand on its own feet. Such a movement should result in raising the standard of living of those removed from the poor land and relocated on the better land. The high costs of roads, schools and other public services in the isolated areas would be reduced and if this is accompanied by a zoning program, the reduction can be made a permanent one. The point remains, however, that the purchase of poor lands would have little effect in reducing production and hence small consequence as a substitute for the temporary agricultural relief program. In fact, it might have exactly the opposite effect. If the farmers removed from poor land are placed on better land, production will be increased unless they are deliberately given smaller areas than they cultivated before.

It is with great reluctance that one subscribes to any long time program which reduces the output per farm or per farmer. Reducing the number of farms and farmers is one thing, and reducing the output per individual is quite another. The latter method may result in dividing a decreased output among the same number of farm families whose production costs have risen by virtue

[12] O. E. Baker, Division of Land Economics, U. S. Department of Agriculture, Washington, D.C.

of their decreased activities. Furthermore, the creation of more and smaller farms will result, in all probability, in dividing the farm income among a larger number of people and may result in smaller shares to the individual.

This logic leads one to search for a solution that will utilize in the fullest the present capacity of our developed good lands, and which will utilize the available farm plants and equipment on

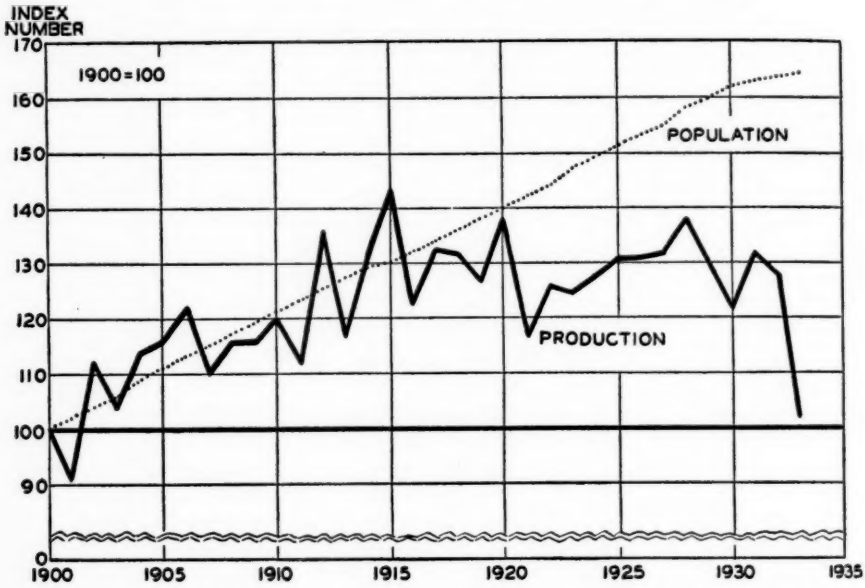

FIGURE 1.—Index Numbers of Population and Total Production of Ten Principal Crops, United States, 1900-1933.

Crop production has remained practically stationary with a tendency to decline during the past decade and a half, while population has increased one-sixth during that period.
Source: Population—Statistical Abstract of the United States, 1932, p. 3.
Production—Crops and Markets, December, 1932, p. 467.
Crop production for 1933 preliminary.
Ten crops: wheat, corn, oats, barley, rye, buckwheat, potatoes, hay, tobacco and cotton.

those lands. The possibilities of the foreign market seems to hold the most fruitful promise in meeting these qualifications.

The reduction program is based upon the assumption that the agricultural crisis is due to an overproduction. That assumption is open to question, or at least it is subject to various interpretations. Overproduction is often interpreted as implying that agriculture has greatly increased its output. This is not the case. The volume of the 10 most important crops has remained practically stationary since 1920 while population has markedly increased during the same period (Figure 1). Of the more important agricultural commodities or groups of commodities only the produc-

tion of dairy products and meats have kept pace with population growth. The crop production of 1934 promises to be the lowest for any year during this century.

The point in reciting these data is to emphasize what seems to be the obvious fact, that agriculture has not been guilty of planless increases in crop production during the past decade. If we have overproduction, it cannot be laid at the door of growing more and more.

It is true, that stocks of important staples such as cotton and wheat, for example, have piled up in our warehouses in alarming proportions. But we must look to causes other than increased production for an explanation. In only two years since 1914 have cotton exports, measured in bales, not dollars, exceeded the exports of the five year pre-war average. With wheat, the tale is sad, indeed. The exports of this product have declined steadily from 220,000,000 bushels in 1926 to 40,000,000 bushels for the year ending June 30, 1933.

Here in part, at least, is an explanation as to why stocks of these commodities have piled up in our warehouses and elevators. The cause is not so much that we are *producing more,* but rather we are *selling less* abroad. The relation between declining exports

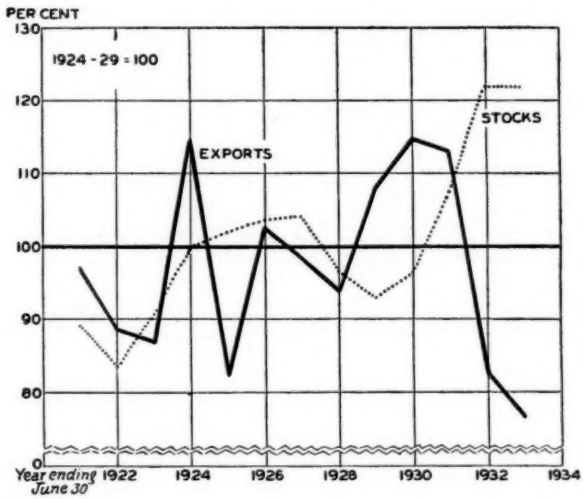

FIGURE 2.—Index Numbers of Tobacco Exports and Storage Stocks, United States, 1921-1933.

Increased tobacco storage stocks reflect the decline in tobacco exports since 1930.
Source: Calculated from data given
Stocks—1919-1930 Yearbook of Agriculture, 1931, pp. 708-711.
1931-1932 Yearbook of Agriculture, 1933, p. 504.
1933 Survey of Current Business, April, 1934, p. 42.
Exports—1920-1932 Yearbook of Agriculture, 1933, p. 497.
Foreign Crops and Markets, Vol. 27, No. 15, p. 413.

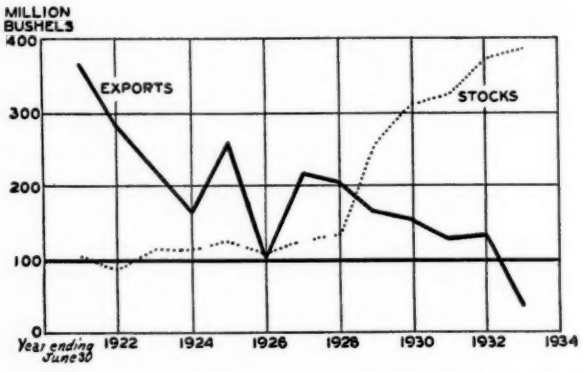

FIGURE 3.—Wheat Exports and Storage Stocks, United States, 1921-1933.

The decline in wheat exports explains, in large measure, the increase in storage stocks.
Source: Stocks—1921-1932 Yearbook of Agriculture, 1933, p. 416.
1933 Foreign Crops and Markets, Vol. 27, No. 10, p. 256.
Exports—1920-1932 Yearbook of Agriculture, 1933, pp. 403-404.
1933 Foreign Crops and Markets, Vol. 27, No. 15, p. 400.

and accumulating stocks are emphasized in the case of tobacco and wheat (Figures 2 and 3). The fall in tobacco exports since 1930 is reflected clearly in the increased stocks on hand. While declining exports do not account wholly for the volume of surplus wheat stocks, they go far in explaining the situation.

Let us delve a little deeper into the export situation and its relation to agriculture. During the 10 year period 1919 to 1928,

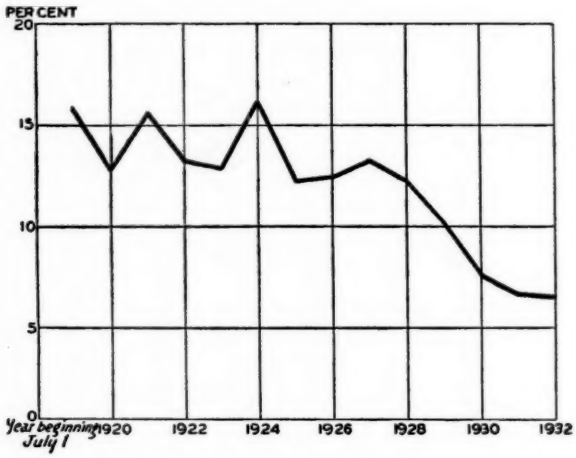

FIGURE 4.—Percentage of Farm Production Exported, United States, 1919-1932.

Ordinarily the crops from one acre in seven are sold abroad.
Source: Calculated from the ratio of the farm value of exports to gross income from farm production. See mimeographed report "The Export Ratio for Agricultural products in 1930-1931." Bureau of Agricultural Economics, April 23, 1932, and revised income figures in "Crops and Markets," Vol. 10, No. 4, April, 1933, page 144, Table 2.

United States exported something over 13 per cent of its total farm production. In other words, the products of one acre in seven of our crop land found outlets beyond our shores. This accounted for around 50 million acres—an amount as large as the contemplated reduction under the adjustment program. Agricultural exports began to decline at the end of 1928 and have continued

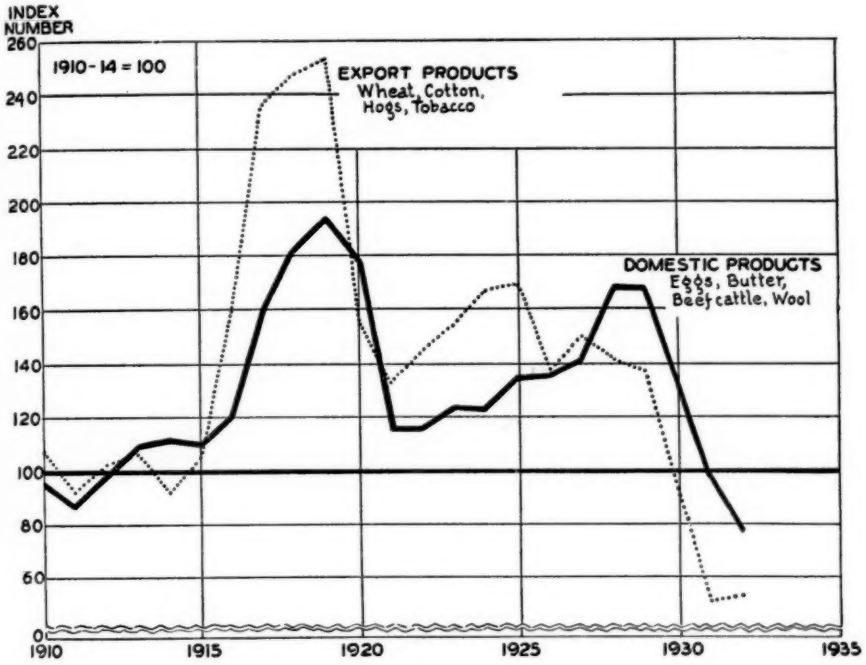

FIGURE 5.—Index Numbers of Farm Prices of Commodities on an Export Basis and Commodities on a Domestic Basis, United States, 1910-1932.

In 1932 the prices of agricultural export products were only 55 per cent of their 1910-1914 average, while the prices of representative domestic products were 78 per cent of their five year pre-war average.

Source: Calculated from Average Prices Received by Farmers of the United States as published by the Division of Crop and Livestock Estimates, Bureau of Agricultural Economics; each price weighted according to its relative importance.

their downward trend until last year when they were only half the usual amount—6.5 per cent of production[13] (Figure 4).

It is interesting to compare the prices of agricultural commodities on an export basis with those on a domestic basis (Figure 5). That it really paid to grow those staples demanded abroad

[13] Dowell, Austin A. and Jesness, Oscar B. The American Farmer and the Export Market. University of Minnesota Press, 1934. pp. 66-86. These authors estimate that during the period 1920 to 1930 inclusive, around 60,000,000 acres or 16.4 per cent of land in crops were used to supply foreign markets. This estimate includes not only the crops exported, but also the land utilized in producing the pork and lard exported, and the acres required to furnish feed for horses and mules used in growing crops for export.

is shown by the fact that the prices of wheat, cotton, hogs and tobacco which are on an export basis were higher during the period 1915-1927 than were butter, beef cattle, wool and eggs which are on a domestic market basis. The only exceptions to this generalization are the years 1919 and 1920. But in 1928, when agricultural exports began to decline, the prices of commodities depending upon the overseas markets suffered heavier declines than did those consumed in their entirety at home. In 1932, the prices of the four exportable products were only 55 per cent of their 1910-1914 average price, while the prices of the four domestic products were 78 per cent of their five year pre-war average.

It is the commodities on an export basis that are the greatest sufferers in this distressing period of price declines. Their continued unfavorable position will cause these farmers to shift to products that compete in the domestic market. This is a tendency not generally appreciated. Farmers whose products are not dependent upon foreign takings are inclined to hold that the export market is of little concern to them. The dairyman and the poultryman, for instance, often assume that they are immune from the depressing influences of a declining international trade, since their products are consumed in this country and experience little competition from abroad.

But if the cotton and wheat grower cannot sell their surpluses abroad, it is logical that they turn to the production of milk and other commodities confined to the domestic market. Most assuredly it is to the advantage of every grower that foreign markets continue to absorb in goodly quantities our wheat, cotton, tobacco and pork. Whether from choice or not, all farmers are stockholders in this large concern called the nation's agriculture.

An advocate of the expansion of foreign trade in this day of national isolation is confronted with the question: Is a recapture of our foreign markets possible? Many maintain that the internationalist is a dreamer in the midst of realities that deny the fulfillment of his cherished hopes. It is said that foreigners cannot be forced to buy if they do not choose to do so. The answer is that the policy of this government has not been such as to encourage trade. Rather have the high tariff walls of this country made trade difficult, and in many cases impossible. Certainly a nation cannot sell abroad, if it is not willing to buy abroad.

The present American tariff—The Smoot-Hawley act of 1930—is highly protective. This statement is made in the face of the claims of its proponents that two-thirds of our imports enter free of duty. Few statements are more misleading in their implica-

tions. The higher the tariff, the greater may be the proportion of goods that enter duty free. If all tariff rates were at embargo levels, then the goods that did enter our ports would be wholly limited to duty free articles. They would make up 100 per cent of our imports.

Such a situation may be, and in this case is evidence of, high duties rather than low or moderate rates.

There is evidence of a growing feeling that national isolation is not a solution to the present unacceptable situation. One may well doubt if it is attainable even though it were desirable. Those who place faith in the remedial qualities of more foreign trade are faced with the painful question: How are high tariff schedules to be lowered? Truly that is a problem. It is not to be minimized. A duty once imposed builds its own defense through the creation of vested interests. The "ins" are more powerful in remaining in, than are the "outs" in getting them out. Leaders of industry are unimaginative, indeed, who cannot put up a plausible argument for more and higher tariffs. Lowering tariffs, like dieting, is disturbing at best. One hesitates to propose an added jolt in these times for fear of retarding the recovery of the invalid. Hence a general tariff reduction based upon item by item consideration does not seem feasible. No matter how general and acceptable is the thesis that tariffs should be lowered, detailed consideration of each item calls forth such an accumulation of protests as to make that method impracticable. Less objectionable, even though far from scientific, would be a graduated general reduction on all existing rates agreed to by the more important commercial nations.

Recent legislation grants to the President authority for concluding reciprocal trade arrangements. This new power is designed to promote foreign trade. Such arrangement may be open to objections on the grounds that they are based upon the granting of preferences. Preferences invite retaliation. Retaliations often lead to trade wars. The preference sting is diluted by the application of the most-favored-nation principle. But preferences widely extended cease to be preferences. Furthermore, nations do not so readily grant concessions if they are to be widely distributed among competitor countries.

Important events of the past few years have tended to weaken the application and force of the most-favored-nation clause. In August, 1930, the representatives of the eastern European countries meeting in Warsaw formally expressed the view that the abrogation of the most-favored-nation principle in its application

to agricultural products was the only solution to the agricultural crisis. They held that if they were to buy manufactured commodities of the industrial nations of western Europe, those nations should accord the agricultural products of eastern Europe a favored market. This could not be done under most-favored-nation treatment. The League of Nations has not been wholly unsympathetic to these arguments. Furthermore, the quota system and foreign exchange regulations violate the spirit if not the letter of the most-favored-nation principle. Preferences resulting from the application of these two mechanisms are not automatically extended to other nations with which the manipulator has most-favored-nation arrangements.

This situation greatly weakens the force of existing commercial treaties. It may even lead to their denunciation. Such a state of affairs may go far in explaining why reciprocal arrangements are enjoying an ever-increasing popular vogue.

President Roosevelt indicated their widespread adoption in his message to Congress:

> "Other governments are to an ever-increasing extent winning their share of international trade by negotiated reciprocal trade agreements. If American agricultural and industrial interests are to retain their deserved place in this trade, the American government must be in a position to bargain for that place with other governments by rapid and decisive negotiations based upon a carefully considered program, and to grant with discernment corresponding opportunities in the American market for foreign products supplementary to our own.
>
> "If the American government is not in a position to make fair offers for fair opportunities, its trade will be superseded. If it is not in a position at a given moment rapidly to alter the terms on which it is willing to deal with other countries it cannot adequately protect its trade against discriminations and against bargains injurious to its interests. Furthermore a promise to which prompt effect cannot be given is not an inducement which can pass current at par in commercial negotiations. . . . The executive branches of virtually all other important trading countries already possess some such power.'"[14]

The experience of this country with reciprocal arrangements has been limited indeed. It has concluded only three such agreements: with Canada in 1854, which treaty was denounced in 1866; with Hawaii in 1875, which arrangement ended with the annexation of those islands; and with Cuba in 1903. This latter treaty is still in force.

From time to time, between the McKinley tariff of 1890 and the Fordney-McCumber tariff of 1922, the government has mildly flirted with the principle of reciprocity in a bashful sort of way. In the main, its advances were in the form of penalties rather

[14] *Chicago Herald-Examiner*, March 3, 1934.

than in the form of rewards. Legislation leans toward the imposing of countervailing duties levied as a punishment.

It is true that there exists the so-called flexible provision. This arrangement has done little more than introduce a new definition for the term flexible as something that stretches only one way—up. The flexible provision has been little used in adjusting tariffs downward.

One of the greatest virtues of reciprocal arrangments lies in the promise as a means of lowering the tariff. It is not reasonable to expect from them marked developments within a short time. Their greatest significance is the indication of increased attention being directed by the administration toward the recapture of lost world markets.

The United States as the world's greatest creditor nation, and at the same time, one of the highest protectionist countries, presents a spectacle similar to that of attempting to answer the physicist's hypothetical question as to what would happen if an irresistible force met an immovable body. It just can't happen. We must choose, as Secretary Wallace so aptly states. In choosing let us, at least, give the foreign trade phase a sincere trial. Professor H. C. Taylor, American delegate to the International Institute of Agriculture at Rome, makes a comment in a recent communication to the author, worthy of repeating. He says:

"I am convinced that the ultimate solution of the farm problem as well as the industrial problem in the United States is the finding of an adequate market abroad for

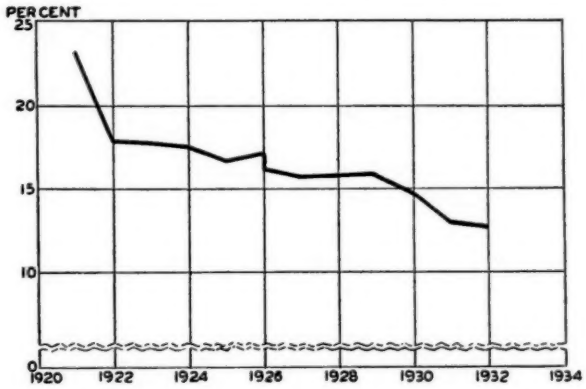

FIGURE 6.—Percentage of World Exports from the United States, 1921-1932.

World exports as a whole have declined, but the international trade of the United States has declined more than the international trade of the world.

Source:

1921-1926 Commerce Yearbook, 1926, Vol. II, pp. 590-591, (72 countries)
1926-1931 Commerce Yearbook, 1932, Vol. II, pp. 720-721, (108 countries)
1932 Commerce Yearbook, 1933, pp. 344-345, (109 countries)

all the agricultural products we can economically produce. We will, of course, have to take products of foreign countries in exchange for our products but would it not be nice to have these products from abroad to consume rather than to produce nothing and to have nothing in exchange for the nothing we produce for export."

Some will explain the decline of our foreign trade by the fact that world trade, as a whole, has been greatly reduced. It is true, that world trade has declined during this depression; but it is also true that the international trade of the United States has declined more in proportion than has the international trade of the world. In 1921, exports from this country accounted for 23 per cent of the world's exports; in 1925, it was around 17 per cent; in 1930, 14 per cent; and in 1932 exports had fallen to less than 13 per cent of the world's total. The United States has not held its own in this battle for world markets (Figure 6). The government has not seriously turned its hand to the task.

It is said that the decreased purchasing power of the European consumer does not enable him to buy our goods. But this statement entirely overlooks the fact that he is now buying many things at prices much higher than the rates at which we could furnish them. For example, recent quotations on wheat in Berlin were $1.92 per bushel. The price in Paris was $2.01, and in Milan it sold for $1.82 per bushel. These prices are nearly three times the world price as quoted on the Liverpool market. These countries need our wheat. Certainly they have products which we could buy to advantage.

In emphasizing the possibilities of the foreign market, the author is quite aware that never in the history of this country have nations in peace times created so many barriers designed to limit, if not prohibit, the entry of foreign goods. A reduction of tariff levels in this country invites added difficulties. The opposition to reduction will be intense. Sacrifices in some fields of activity will have to be made. Agonizing wails in some quarters will be loud, indeed. We sunk into this depression. We cannot crawl out painlessly under an anesthetic of nationalism. The pain will be no more severe, and the advantages immeasurably greater if our national policy be generously flavored with an international point of view.

While declining agricultural exports may not have caused the depression, certainly their loss contributed substantially to its severity. A recapture of these markets may not in itself banish the depression, but it is doubtful if lasting agricultural prosperity can be obtained without a revival of agricultural export movements.

THE BOUNTY AND PROCESSING TAX ON WHEAT IN HUNGARY[1]

MYER LYNSKY
BUREAU OF AGRICULTURAL ECONOMICS

A comprehensive system of measures aimed at securing higher prices for the grower of wheat has existed in Hungary since June 15, 1930.[2] The main feature of the system up to July 1933, was a boletta, or grain ticket, which served on one hand as the means of paying a bounty to the producer and on the other hand as the means of collecting a tax from the miller and feed merchant. The program of farm aid was considerably revised after August 1933, but in the meantime three years of experience had accumulated. This experience is now available for observing the effects of the boletta and its accompanying measures on prices, output, stocks, and price spreads, and for drawing some conclusions as to the value of such a measure to the farmer and to the country as a whole.

As far as can be ascertained, the Hungarian boletta system provided a significant addition to the income of the wheat grower without affecting the market price of wheat measurably. The boletta contributed materially towards restoring the relation between farm purchasing power and the price of things the farmer buys to what it had been before the war and also between 1925 and 1928. The baker's and miller's margins, so far as the data available can show, apparently were increased by nearly the full amount of the processing tax, the net margins apparently retaining their former relationship to the level of wages and materials costs. During the three years of the boletta processing tax the price of bread rose above what it otherwise would have been and remained at about half a cent a pound below the price that had existed during the preceding three years. The maintenance of the price of bread contributed to the disparity between payrolls and the cost of living, which appeared early in 1931, and thereafter increased rapidly with the continued decline of payrolls.

Comparison of the Hungarian and American Situations[3]

The economic setting in Hungary parallels the situation in the United States in several respects and the Hungarian program of

[1] The writer is indebted to the staff of the Foreign Agricultural Service Division for assistance in the preparation of this paper. Particular credit is due Mr. Ladislas Lorinez of the Office of the American Agricultural Attaché at Belgrade for basic information from the field.

[2] The measures were equally concerned with rye, but since rye is much less important, the discussion here is limited to wheat.

[3] For background matrial and fuller details concerning the program in Hungary, see United

intervention in the wheat industry presents some interesting similarities in its essential principles. The national economy includes both a considerable agricultural industry and a considerable mining and manufacturing industry, with about 57.5 per cent of the population found in places of less than 10,000 as compared with 52.5 per cent in the United States. Hungarian agriculture on the whole, and the wheat-growing industry in particular, are largely on an export basis, and to a considerable extent dependent upon world conditions of supply and demand. The large and well established milling industry is also dependent upon world conditions, for it not only supplies the needs of the home market but also ships flour abroad in large quantities. The baking industry is of course on a domestic basis as in this country and bread is made and sold by many bakeries, some of which are large and almost wholly mechanically operated and many of which are small and mostly hand operated.

In one important respect the Hungarian program closely resembles the program in this country. A tax is levied on the processing of an agricultural product and out of the proceeds payments are made to the agricultural producers for the purpose of enhancing their income. Sales for export are relieved of the burden of the processing taxes in order to enable the domestic industries to compete abroad at world parity.

However, some differences between the two countries are to be noted, both in the position of agriculture and in the measures designed to furnish assistance to it. Agriculture occupies a relatively more important place in the Hungarian national economy, but a relatively much less important one in the world economy. Although both countries are exporters of wheat, Hungary contributes but 3 per cent of the world's exports as against 21 per cent contributed by the United States (1925-26 to 1929-30 averages). Inasmuch as any stimulus to production in Hungary would result in an almost negligible increase in world supplies, the repercussion, through a reduction in world price, upon the price of wheat in Hungary is practically negligible. Increased production in the United States obviously would affect the world price in a serious manner.

There is a difference between the elasticity of supply in the two countries. In Hungary about two-thirds of the wheat (and

States Senate Document 70—*World Trade Barriers in Relation to American Agriculture* (June 1933), pp. 400 et seq. For more complete statement of the program of the United States, see United States Department of Agriculture, *Economic Bases for the Agricultural Adjustment Act* (December 1933), by Ezekiel, M., and Bean, L. H., pp. 58 et seq.; and *Agricultural Adjustment, A Report of Administration of the Agricultural Adjustment Act, May 1933, to February 1934* (February 1934), Chapters 1, 4, and 16.

likewise of cereals in general) is produced on farms of less than 142 acres in size, where the emphasis is apt to be on subsistence rather than commercial production. Comparable statistics are not available for the United States, but there can be little doubt that a much smaller share of the output is produced on subsistence farms, the preponderant share of production being on a commercial basis. The technical conditions of production on these small farms are very inefficient, being characterized by crude implements and a large outlay of hand labor. For these reasons, the responsiveness of wheat production in Hungary to changes in price may well be expected to be less than in the United States. This situation tends to offset an important difference in the measures undertaken in Hungary and in the United States. Whereas a prominent feature of the measure in force in this country is the control of acreage through voluntary agreements, no such provision is to be found in the Hungarian system of aid. In Hungary the payment is made on a per-bushel basis and without any stipulation as to the volume of output, while in the United States the payment is made on the basis of acreage during a base period 1930 to 1932, with the stipulation that a reduction of 15 per cent of the base acreage shall be made in seedings.

A Brief Account of the Boletta System from July 1930 to June 1933

The boletta system was established in Hungary by a law effective July 15, 1930, which specified that wheat, rye, or their mixture, both imported and domestic, must be accompanied by a purchasing permit when moving in commercial channels. A prospective purchaser of cereals had to obtain the permit in the form of a boletta or grain ticket from the local municipal authorities, the cost being fixed by decrees each crop year. The proceeds went into a central fund known as the cereals valorization fund. The boletta included a coupon to be detached and given to the farmer so that in addition to the selling price of the grain, he obtained a coupon which was to be redeemed by the government.

As the grain moved from one buyer to another, each was obliged by the law to purchase the accompanying boletta from the preceding owner, so that the cost of the grain to the latter was automatically restored to the level of the market price quotation corresponding to world parity at the particular point in the marketing process. This could happen so long as the grain was sold to some other purchaser or intermediary in Hungary. But the exporter obviously could not dispose of the ticket to his

foreign clients; and the miller did not sell wheat but flour and, unless reimbursed for the cost of the ticket, had either to absorb its cost or to charge higher prices for his flour.

What in fact happened was that the government took up the cereals ticket from both miller and exporter. It reimbursed the exporter of the wheat and flour for the cost of the ticket, thus enabling both to compete in the world market. But it did not similarly reimburse the miller for the added cost of the wheat ground into flour for sale in the domestic market. Rather, he was obliged to surrender his purchasing permits without compensation, so that the cost of the ticket became simply an added cost of processing.

Although by far the most important element in the price-supporting program of Hungary, the boletta was not the sole measure undertaken after 1930. Earlier in the year a Cooperative Societies Trading Co., more commonly referred to as the "Futura," had been established, with the controlling shares held by the government. The Futura very quickly became a dominating factor in the Hungarian grain market. Acting for the government, it entered upon stabilization operations, and by February 1931, had acquired stocks of wheat representing the bulk of the current surplus. A little later in the year, a Syndicate of Exporters and a Syndicate of Millers were also established. Membership in the Syndicate of Exporters was mandatory and it is reported that on at least two occasions minimum prices were established to govern exports to Austria, which is the chief outlet for Hungarian wheat and flour.

Besides exercising control through these institutions the government could under the boletta law of July 1930, "determine the price to be collected by millers for milling, the milling ratio, the price of the products of milling, and the price of bread." The government could also vary the price of the boletta and increase the rate of the general turnover tax applied to sales of flour (normally 2 per cent). The more drastic of these direct administrative controls was not utilized by the government, but the authority to vary the amount of the boletta and the flour sales tax was used to a considerable extent and in fact formed the chief means for readjusting the price-supporting program each crop year.

The cost of the boletta to the purchaser of wheat was originally set at 3 pengo per quintal (14.2 cents per bushel). At the same time, beginning July 15, 1930, the tax on selling flour was increased from 2 per cent to 10 per cent (equivalent to about 4.4

cents on a bushel of wheat). During 1931-32 and 1932-33, the price of the boletta was increased to 10 pengo (47.5 cents per bushel) and the tax on selling flour was raised to 2.5 pengo (11.8 cents per bushel of wheat). Thus the cost to the miller amounted to 18.6 cents per bushel in 1930-31, 59.3 cents in 1931-32, and 59.3 cents in 1932-33. These amounts are, of course, much higher than the 2.5 to 3.0 cents per bushel equivalent of the 2 per cent sales tax which had been in effect on flour for several years previous.

Being mostly in the nature of a refund of the processing tax, the payments to the exporter of wheat or wheat flour were also changed each year to conform with the amount of the tax. During 1930-31 the exporter received only the refund of the 3 pengo per bushel expended by him for the boletta. In 1931-32 he was reimbursed for the boletta, this time amounting to 10 pengo (47.5 cents per bushel), and during the months July to October, also received an export premium of 2.5 pengo (12 cents a bushel). In 1932-33 he was simply reimbursed for the boletta of 10 pengo (47.5 cents per bushel). Sales of wheat and flour abroad were of course free of any turnover tax, as they had been for several years.

The payment to the farmer varied considerably from one crop year to the next. During 1930-31, it amounted to 3 pengo per quintal (14.2 cents per bushel) and was receivable only in the payment of taxes. In 1931-32 the amount was doubled (28.5 cents per bushel), half being receivable in the payment of taxes and half being receivable in cash, provided that taxes were not in arrears. In 1932-33 the cereals grower received 4 pengo per quintal (19 cents per bushel), half being receivable in payment of taxes, as previously.[4]

Effects of Intervention on the Price of Wheat

Special interest attaches to the boletta system as a particular technique adopted for the purpose of enabling the wheat farmer to obtain a price above world-parity despite the fact that because of a large exportable surplus the wheat industry is dependent upon world conditions. To the farmer the boletta coupon represented an addition to the selling price of his wheat provided that the market quotation of wheat was not itself affected by the boletta. Presumably the selling price was kept at world-parity by refunding the cost of the boletta when wheat or flour was exported.

[4] Other payments were also provided independent of the boletta. See U. S. Senate Doc. 70, p. 404.

But on the other hand, with imperfect competition among exporters, the possibility exists that the processing tax levied upon domestically consumed wheat might have had a depressing effect upon the internal price of wheat. Nevertheless, if investigation discloses that the price of wheat in Hungary maintained its former relationship to the world price of wheat and other related variables through the period 1930-31 to 1933-34, the conclusion must follow that market quotations were at world-parity and that the farmer did receive an addition to the world-parity price.[5]

Ordinarily the price of wheat at Budapest is lower than the price at Liverpool (Figures 1 and 2), the spread varying mostly in accordance with the amount of the Hungarian exportable sur-

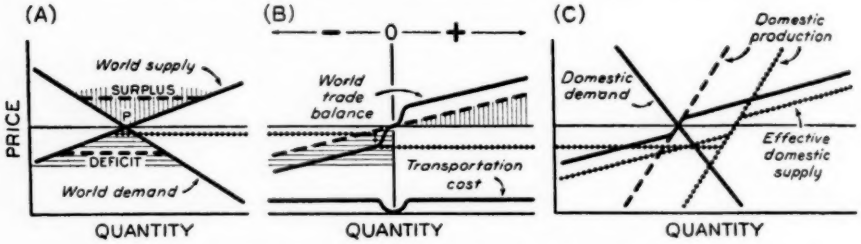

FIGURE 1.—The inter-relationship of world demand and supply of wheat, transportation costs (including duties, etc.), and the Hungarian demand and supply for wheat.

The relative importance of domestic supplies as against world supplies in determining the price of wheat in Hungary, and therefore the spread between the Hungarian price and the world price, depends upon the amount of the domestic Hungarian supply (assuming domestic demand constant and assuming no significant direct quantitative controls). In the immediate region of complete self-sufficiency, domestic supplies are much more important than world supplies in determining the domestic price. The boundaries of this region in terms of quantity of supplies are determined largely by the slope of domestic supply curve and the total of the costs of movement to and from the foreign markets. Beyond the critical region, either on the side of importation or exportation, the price in Hungary may be regarded as being determined largely by considerations of world supply and domestic demand.

plus and changes in transportation charges. The manner in which the more important factors in determining spread usually interact with one another is shown in simplified form in Figure 1. The factors considered are the world supply and demand for wheat (Chart A), transportation costs, including duty (Chart B), and the Hungarian domestic supply and demand of wheat (Chart C).[6]

[5] Quotations of the price of wheat at the farm do not appear to be available. But reports from the Danube Basin Office of the United States Department of Agriculture do not indicate that the spread between farm price and Budapest price was increased. Moreover, sufficient quantities of wheat are marketed directly by growers to maintain the spread at a purely competitive level.

[6] The Charts A, B, and C are not drawn to scale and no attempt is made to show the relative slopes of the demand and supply curves except as between Chart A and Chart C, where the quantities of wheat associated with a given price are much different, the Hungarian quantities being but a small fraction of those of the world as a whole. Straight lines are assumed as sufficiently good approximations to the demand and supply curves over the range involved in the reasoning, and perfect competition is assumed. By world is meant in this connection the world excluding Hungary.

About nine years of observation are available for study. Extreme fluctuations in the value of the Hungarian currency prior to March 1924, prevent the use of the Budapest price of wheat prior to that date for purposes of an international comparison. For the world price of wheat, the price of Liverpool parcels is available back to July 1925, and before that date British parcels, differing on the average but slightly from Liverpool parcels, is available. We are therefore in a position to observe the differential between a representative Hungarian price of wheat and a representative world price over a period of six years before and over a period of three years after the introduction of the boletta.

The situation with which we are dealing here is typical of interregional trade, wherein a large central market usually receives supplies of a commodity from a relatively small market, the physical transfer of the good being subject to costs of movement. In our case the large market is the world ex-Hungary, and the small market is Hungary. The small market can be self-contained only when supply and demand are equal, as at the equilibrium price P on Chart A. At prices higher than P, the difference between the quantity supplied and the quantity demanded affords a surplus for export to Hungary (see dashed line above P on Chart A). At prices lower than P the world market has a deficit to be imported from Hungary (dashed line below P on Chart A). As price varies from less than P to more than P the trade balance of the world market varies from a negative quantity to a positive quantity.

The supply curve of this trade balance is depicted on Chart B, where the dashed line represents the varying length of the dashed line of Chart A. The world trade balance supply lies to the right of the zero axis when there is a surplus and to the left when there is a deficit.

But in the physical transfer of goods from one market to another, transportation costs enter into price. The curve of transportation cost is shown in the lower part of Chart B.[7] In international trade import duties must be added to freight charges, et cetera and frequently constitute a major part of the transpor-

[7] The curve of transportation cost shown on Chart B assumes equal costs for transportation in either direction. When an import duty is imposed upon trade in either direction, the transportation charges are about equal on both sides of the zero axis only when the same amount of duty is imposed on imports in both markets. Such an equality obviously is a very rare occurrence, but inasmuch as the wheat trade between Hungary and the world (ex-Hungary) continued in the direction of exports from Hungary throughout the period under study, consideration of the difference between duties is omitted as an unnecessary complication.

Freight charges are small when only a small total quantity has to be shipped because it can be bought or sold at a relatively nearby shipping point. They usually are larger when more distant shipping points have to be called upon for increased supplies and remain approximately uniform while the most important shipping points continue to be the chief source of supply.

tation cost. If Hungary requires wheat from the world market, Hungary must pay the transportation cost in addition to the price necessary to call forth a surplus trade balance. Therefore the curve of transportation cost is added to the trade balance supply curve to the right of the zero axis. On the other hand, when the world requires wheat from the Hungarian market, the price which the Hungarian exporter receives is less than that which the world importer is willing to pay by the amount of the transportation costs. Consequently the curve of transportation cost is subtracted from the trade balance supply curve to the left of the zero axis.

The total supply of wheat in Hungary consists mostly of the domestically produced crop plus the trade balance supply. The curve labelled "effective domestic supply" (Figure 1, C) has been constructed by adding together for each price the amount of world trade balance (measured horizontally Figure 1, B) that would be supplied at that price and the amount that would be produced by domestic growers at the same price. Under perfect competition the price of wheat in Hungary is determined by the intersection of the total effective supply curve and the domestic demand curve. When the domestic crop is of ordinary size, the intersection of the two curves is below the line of world price; this situation is shown on Figure 1 by beaded lines. The right-hand effective domestic supply curve on Chart C cuts the domestic demand curve at a point below the level of the world price (solid horizontal line). At this domestic price the domestic demand differs from the domestic production by an amount equal to the world market deficit (on Chart A). But when the domestic crop is short, the whole supply curve shifts to the left, bringing the point of intersection up higher. Such a situation is shown on Chart C where the left-hand effective supply curve intersects the domestic demand curve at a level as high as the world price level.

Prior to 1931 the Liverpool-Budapest price spread behaved as might have been expected from the foregoing considerations. When Hungary had a considerable export surplus, the spread was large; and when Hungary had a very small surplus, the spread was small, the extreme spreads being 21½ cents and 1 cent per bushel, respectively. After 1931, the Budapest price appears to be equal to or higher than the Liverpool price, owing to the discrepancy between the fixed rate of exchange declared by the government of Hungary after August 1931, and the rates at which many transactions were actually made. The going market exchange rate for pengo was, of course between the official

rate and the rate on the black bourse. The clandestine rate is unofficially reported to have been lower than the official by anywhere from 20 to 50 per cent. If the Budapest price of wheat is converted to cents per bushel at anything near what must have been the going market exchange rate for pengo, the price in cents is less than the Liverpool price. In 1931-32 it probably was somewhere around 10 to 20 cents lower, and in 1932-33 it was somewhere between 1 and 10 cents lower. These differentials are shown on Figure 2 by a light shading under the zero line of average price spread.

The spreads observed after July 1931 are well within the ordinary range of variation, despite increased import restrictions in the countries usually taking most of Hungary's export surplus of wheat. During 1930-31 the stabilization purchases of the Futura (p. 390) tended to counteract the effect of higher duties abroad and also relieved Hungary of the necessity of seeking new and more distant outlets for the surplus. In 1931-32 nearby foreign markets were re-opened by means of preferential arrangements with Austria, France, and Switzerland. During 1932-33, a very short crop precluded large exports and brought the Hungarian market close to a self-contained basis, with the consequence that the spread between the price of wheat at Liverpool and at Budapest was greatly diminished. (See Figure 1, Chart C, where domestic demand meets both domestic production and effective domestic supply at a price as high as the world price.) With the differential accounted for, it follows that the price of wheat at Budapest (ex-boletta) after July 1930 was close to what it would have been if the boletta had not existed.

A partial check upon the foregoing conclusions is afforded through the method of statistical correlation. If changes in the wholesale price of wheat prior to July 1930 are well explained by certain logically suited factors, and if they are also well explained by the same factors after that date, there is a presumption that the price during the later period was just about what would have obtained in the absence of the large processing tax that was imposed. The general body of economic theory, supported by several statistical analyses, indicates that world supplies and general price level usually explain most of the year-to-year changes in a commodity of international trade like wheat. This hypothesis gave very satisfactory results when applied statistically to the Hungarian case. World production (including Russia but excluding China) plus an average between the United States Department of Agriculture's figure of world stocks accounted for and twice Broomhall's figure of world visible sup-

plies as of July 1 was taken as representative of world supply.[8] This series was used as the first independent variable. For the second independent variable the monthly general wholesale price index of the Hungarian Central Statistical Office was averaged for each crop year. The two independent variables had the following values during the nine years upon which the correlation equation is based:

		1924–25	1925–26	1926–27	1927–28
(X_2)	World supply (1,000,000 bus.)	3988	4475	4696	4819
(X_3)	Hungarian price level	148	128	127	134

1928–29	1929–30	1930–31	1931–32	1932–33
5255	4924	5506	5384	5843
133	105	92.8	90.3	77.5

The resulting equation for the relationship between the wholesale price of wheat in Hungary (X_1) and the world supply of wheat (X_2) and the index of wholesale prices in Hungary (X_3) was as follows: $X_1 = 153.5 - 0.0334X_2 + 1.1205X_3$. The coefficient of correlation was about 0.76. The standard error of estimate with standard deviation corrected for $n = 9$, was about 9 ± 2 cents per bushel.

During 1930-31, when the boletta processing tax[9] amounted to 16 cents a bushel, the actual wholesale price (boletta excluded) of wheat was 0.1 cent higher than the estimated price derived from the above equation. In 1931-32, with the tax at 57 cents, the actual price was 16.1 cents lower than the explained price. During 1932-33, with the tax still at 57 cents, the actual was higher than the expected price by 4.6 cents a bushel. On the average the actual price was below the explained price by 5 cents, while the boletta processing tax amounted to 44 cents. It follows, therefore, that only a small part of the decline in Hungarian wheat price can be attributed to incidence backward of the cost of the boletta and even that small part is well within the margin of the ordinary errors of observation and estimation.[10]

[8] The United States estimate of world stocks accounted for is somewhat less than actual carryover because of some data not being available, but it is nearer than Broomhall's figure because the latter takes account only of supplies most readily available. If Broomhall's visible is doubled, the estimate comes nearer to the amount of total world carryover. Adding the United States estimate with twice Broomhall's, and dividing by two gives an estimate nearer to the world carryover than the United States estimate alone and attributes a slightly greater weight to visible supplies.

[9] The term, boletta processing tax, is used here to designate that part of the total processing tax in excess of 2.5 cents per bushel. The latter amount, which had already been levied for several years, in the form of a general turnover tax, is to be excluded as constituting a part of ordinary taxation.

[10] If the observations had not been too few, it might have been better first to establish the relationship between Budapest price and the independent variables prior to the boletta and then by extrapolation to estimate what would have been the price during the next three years if the boletta had not been introduced. On the basis of the six years available for use in this way, the price, ex-coupon, would have been higher during the three years of the boletta than it actually was: 10.6 cents higher in 1930-31, 26.9 cents higher in 1931-32, and 8.5 cents higher 1932-33. It would appear that the boletta tended to depress the price of wheat, and the writer is inclined to think that it did to a slight extent. But with only six observations, the range of error is so wide as seriously to impair the significance of any conclusions made on a

From the foregoing evidence it is highly probable that the wholesale price of wheat, ex-tax, at Budapest during the three years under study was within a few cents of what it would have been in the absence of the boletta. This conclusion also follows from considerations as to the distribution of the burden of a tax. During 1930-31 and 1931-32, when there was a substantial surplus available for export, even a slight tendency to reduce the Hungarian wheat price below the world level would have induced a flow of exports and reduced the supply in the domestic market until the domestic price returned to world parity. The possibility of exporting to the world market makes the domestic supply curve of Hungarian wheat very gradual in slope. Inasmuch as the burden of a tax is distributed between consumer and producer approximately in the ratio of the slope of the demand curve to the slope of the supply curve in the immediate vicinity of the intersection of the two curves, the Hungarian producer was able to escape practically all of the tax burden during 1930-31 and 1931-32.[11] During 1932-33, when Hungary was close to being on a domestic basis a part of the tax burden quite possibly was borne by the domestic producer, for the slope of the supply curve was then much steeper, more closely approximating the slope of domestic output than the slope of the world trade balance (ex-transportation cost). (See Figure 2.)

Inasmuch as the price of wheat in Hungary was in all probability affected only to a slight extent by the boletta processing tax, the boletta coupon received by the farmer must have constituted a significant addition to his income. The sum of the wholesale price of wheat at Budapest plus the coupon was as follows: (per bushel) 1930-31, 88 cents; 1931-32, 87 cents; 1932-33,

TABLE 1. WHEAT ACREAGE, OUTPUT, AND STOCKS IN HUNGARY

(1,000 acres and million bushels)

	1924–25	1925–26	1926–27	1927–28	1928–29	1929–30	1930–31	1931–32	1932–33	1933–34
Acres sown	3,620	3,585	3,756	4,050	4,186	3,795	4,220	4,119	3,793	3,936
Production	51.6	71.7	74.9	76.9	99.2	75.0	84.3	72.6	64.5	90.1
Exports	13.2	19.5	21.6	21.5	25.6	29.6	17.8	17.7	6.9	
Carryover at end of year	—	—	—	0.1	1.8	0.4	5.2	0.5	0.2	

Bureau of Agricultural Economics, Foreign Agricultural Service Division.

purely statistical basis. The writer, therefore, is inclined to place more confidence in the general theoretical analysis than on this particular correlation.

[11] The application of this principle to the Hungarian situation in a year when the crop is of ordinary size is presented in the lower part of Figure 4. The demand for wheat is quite inelastic as compared with the supply. The price at which a given quantity of wheat is produced is increased by the amount of the tax (as from P_1 to P_{11}). But less can be consumed at the higher price and the quantity taken is reduced from Q_1 to Q_2 and the market price from P_{11} to P_{22}. The farmer instead of receiving P_1 now receives P_t. Because of the much steeper slope of the demand curve, the line P_{22} P_t is much greater than the line P_t P_{11}. The longer line represents the part of the tax borne by the consumer and the shorter represents the part borne by the producer.

85½ cents. The question then arises, Did the added stimulus to production result in plantings or stocks in such amount as to constitute a threat to prices in the near future?

A glance at Table 1 will show that there was little prospect for subsequent price declines to follow because of dammed-up surpluses or greatly increased plantings. Although carryover did increase tremendously under the stabilization operations of 1930, it subsided immediately in the next year. Being at a low figure at the close of 1933, carryover could hardly be regarded as a threat to prices in the future. As for plantings, the average for the

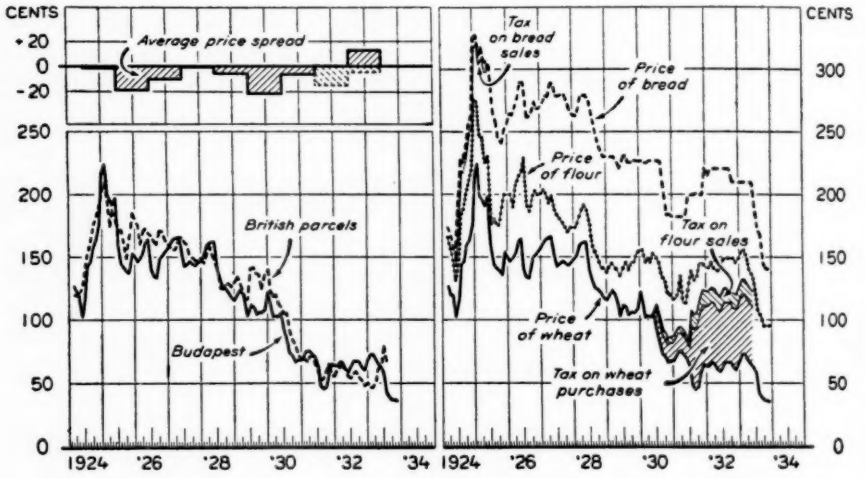

FIGURE 2 (left).—The wholesale price of wheat in Hungary and in Great Britain (British parcels prior to July 1925) and the annual average price spread between them (conversions to cents per bushel at official rates of exchange).

Ordinarily the price of wheat at Budapest is lower than the price at Liverpool, the spread usually varying in accordance with the amount of the Hungarian exportable surplus and changes in transportation charges. Prior to 1931 the average spread ranged from 1 cent to 21½ cents per bushel; after 1931 the Budapest price apparently was above the Liverpool price. But if the Budapest price in pengo is converted to cents per bushel at anything near the going market rate of exchange instead of the fixed official rate, the differentials after 1931 are well within the ordinary range of variation. They are shown for 1931-32 and 1932-33 by a light shading below the zero line.

FIGURE 3 (right).—The price of wheat, flour, and bread in Hungary and the taxes imposed upon their sale, in equivalents of one bushel of wheat grain.

three years 1930-31 to 1932-33 amounted to 4,040,000 as compared with 4,010,000 acres for the previous 3-year period. For 1933-34 sowings are lower than they were in 1927. So far as plantings were concerned there was no immediate prospect in 1933 of greatly increased supplies in the near future. The effect of the boletta bounty apparently was no more than that of stabilization. It follows, therefore, that not only was the price of wheat in Hun-

gary during the three years of the boletta system within a few cents of normal in relation to world supplies, but also that in the immediate future the open market price would probably continue to be free from any adverse effects attributable to the boletta.

Effects of Intervention on Flour and Bread Prices and Margins

The price of flour and of bread after July 1930, were of course affected by the processing tax feature of the boletta. The price of wheat in Hungary, following the trend of world wheat prices, continued the decline that had begun in 1928. (See Figures 2 and 3.) During the years after July 1930, it averaged 66 cents as against $1.27 for the years preceding, the difference being 61 cents. In contrast to this large decrease the price of flour declined by only 20 cents, going from an average of $1.58 per 45 pounds[12] to an average of $1.38 in the same 3-year periods. (See Figure 3 and Table 2.) The price of bread declined by 40 cents, going from $2.47 per 66 pounds[12] to $2.07. The difference between the decline in wheat price on the one hand and flour and bread prices on the other should, of course, be due largely to the imposition of the boletta processing tax.[13] Since this averaged about 44 cents during 1930-31 to 1932-33, a shrinkage in milling and baking margins must have occurred, for instead of being less by 44 cents, the change in the price of flour is less by 41 cents than the change in the price of wheat, and the change in the price of bread is less by 21 cents.

As a matter of fact, both the millers' and the bakers' margin did diminish after July 1930. The millers' margin declined slightly from 29 cents in the period 1927-28 to 1929-30 to 26 cents in the period 1930-31 to 1932-33, and the bakers' margin declined from 88 cents to 68 cents.

These decreases were each the continuation of an earlier downward trend. (See Table 2 and Figure 5A.) Prior to 1930 the millers' margin oscillated widely about a precipitous downward sloping trend. Following July 1930, the slope of the trend appears to have diminished somewhat, although it is difficult to observe because of the wide fluctuations in the millers' margin from one year to the next. The trend is more easily discernible

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[12] The price of flour and the price of bread are here computed on the basis of the outturn of a bushel of wheat, viz., 45 pounds of flour and 66 pounds of bread. These figures are based upon milling and baking tests in the United States made of samples of 4 different kinds of Hungarian wheat. See United States Department of Agriculture, *Tech. Bull. No. 197, Milling and Baking Qualities of World Wheats* (October 1930), p. 126. While not fully representative of the outturns that would have been secured by Hungarian mills and bakeries, these results are reasonably accurate. Moreover, they are quite satisfactory for measuring changes from one time to another, inasmuch as constant errors tend to be eliminated in the process of subtraction.

[13] See footnote 9.

TABLE 2. PRICES AND MARGINS OF WHEAT, FLOUR, AND BREAD IN HUNGARY, TAXES AFFECTING THEM, AND VARIOUS INDEXES OF PRICE LEVELS

Prices, taxes, and margins	Units	Crop years—July-June									
		1924–25	1925–26	1926–27	1927–28	1928–29	1929–30	1930–31	1931–32	1932–33	1933–34[a]
Price of bread	Cents per 66 lbs.	275	266	275	274	239	227	196	210	214	158
Price of flour, No. 0	Cents per 45 lbs.	221	194	200	180	147	148	127	140	148	104
Tax on buying wheat	Cents per bushel	0	0	0	0	0	0	14.2	47.5	47.5	14.2
Tax on selling flour	Cents per bu. wheat	4.4	3.0	3.0	3.0	2.4	2.1	4.4	11.8	11.8	21.4
Total processing tax	Cents per bu. wheat	4.4[b]	3.0	3.0	3.0	2.4	2.1	18.6	59.3	59.3	35.6
Price of wheat	Cents per bu. wheat	177.5	150.2	152.4	151.0	121.8	107.5	73.7	58.8	66.4	41.8
Margins(tax excluded)											
Bread less flour	Cents per bu. wheat	46[b]	72	75	94	92	79	69	70	66	54
Flour less wheat	Cents per bu. wheat	39	41	51	26	23	38	35	22	22	26
Bread less wheat	Cents per bu. wheat	93[b]	113	120	120	115	117	104	92	88	80
Index numbers of margins	1927–30=100%										
Bread less flour	100% =84 cents	55	86	89	112	110	94	82	83	80	64
Flour less wheat	100% = 32 cents	122	128	159	81	72	119	109	69	69	81
Bread less wheat	100% =116 cents	80	92	103	103	99	101	94	79	76	

Index numbers of price levels (1927–30=100)	Units	Calendar years									
		1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Factory payrolls	100% =$75,800,000	60	79	84	96	103	106	95	81	67	
Cost of living			96	90	98	104	104	94	89	86	80
Industrial prices		110	110	98	102	104	101	94	86	83	79
Price of bread	100% =3.7 cents per lb.	83	118	110	113	106	93	88	78	89	76
Bread price less boletta								85	63	66	56

Bureau of Agricultural Economics, Division of Foreign Agricultural Service.
Original data largely from *Annuaire Statistique Hongrois*, *Magyar Statisztikai Szemle*, *Monthly Report of The National Bank of Hungary*, and U. S. Department of Agriculture, Danube Basin Office, *Wheat Reports* and *Special Reports*.

[a] Six months only, Jan.–June.

[b] During 1924–25 an additional 8 cents was levied on the sale of bread. This is excluded in computing the margins.

in the bakers' margin, for fluctuations about it are less pronounced. It is seen to have increased rapidly until 1928 and subsequently to have decreased at a somewhat lesser rate.

The question of whether the boletta processing tax was in part absorbed by the miller or baker, whether it was used as a means of increasing the processing margin over what it otherwise would have been, or whether it was passed on practically unaltered to the consumer resolves itself into explaining the changes observed in the millers' margin and the bakers' margin. As has already been pointed out (p. 397) the cost of the tax is divided between the consumer and the producer approximately in accordance with the ratio of the slopes of the demand and supply curves in the region of their intersection. The application of this principle to the Hungarian case is shown on Figure 4. Bread is the product of three producers: the farmer who supplies the wheat grain, the miller who supplies the grinding service, and the baker who supplies the final processing service. Fortunately for the purpose of discussion, the slopes of the demand curves are al-

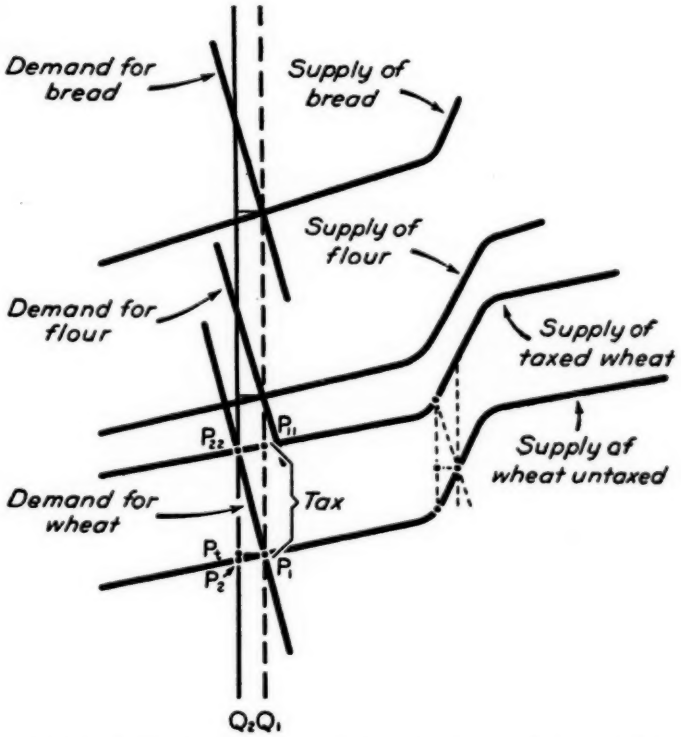

FIGURE 4.—The incidence of processing tax on wheat levied upon the miller.

The tax increases the cost of the product and the price to the consumer. Demand is diminished and the price declines to a point where the amount taken and the amount offered are equal. Including tax, price is higher now by something less than the full amount of the tax, and, excluding tax, it is lower by an amount corresponding to the remaining part of the tax. The relative amount of increase on the one hand and decrease on the other is determined by the relative slopes of the demand and supply curves in the region of their intersection. Perfect competition, increasing costs, and responsiveness of supply to price are assumed here.

most identical and the slopes of the supply curves[14] are all very gradual. The effect of the tax on quantity consumed is practically the same for the three products, being reduced from Q_1 to Q_2. But the price of each product is lowered by a different amount. The price of wheat is lowered by the amount, P_{11} minus P_{22}; the price of flour is lowered by slightly more than the foregoing; and the price of bread is lowered by a still greater amount. The amount, P_{11} minus P_{22}, constitutes the wheat producers' share of the tax burden and the succeeding increments to that difference

[14] The demand curves for bread, flour, and wheat (for bread making) have almost the same slope, since the demand for each of the last two is derived directly from the demand for bread. The slope of the supply curve of wheat intended for bread-making differs but slightly from the slope of the supply curve of all wheat inasmuch as both include the highly elastic curve of world trade balance supply. (Page 399 and Figure 2.) The supply curve of flour has slightly greater slope, owing to the greater slope of the supply curve of the millers' services. The supply curve of bread is even more steeply sloped because of the lower elasticity of supply of the bakers' services.

constitute the share of the tax borne by each new processor in the chain of production. The amount of the tax shifted to the consumer becomes correspondingly less as each intermediary producer assumes a share of the tax burden. But in the last analysis the consumer bears most of the burden of the tax for the slope of his demand curve is relatively very steep, whereas the slope of the supply curve of the final processor, determined largely by the world trade balance supply, is relatively very gradual. Of course, if the country is near enough to being exactly on a self-sufficient basis for wheat, all of the supply curve slopes are quite steep and the division of the tax burden between producers and the consumer alters accordingly.

If competition among the producers or processors is limited by some understanding as to price, the situation may be so altered as to result in the consumer bearing all of the tax. But it is reported that considerable competition between the mills of Budapest and the provincial mills precludes the possibility of collusion for the purpose of keeping up domestic flour prices. Likewise, the large number of small city bakers operates to keep the price of bread on a competitive plane.

As far as processors are concerned, perhaps, the ideal approach to statistical verification of the above analysis would be to examine cost data derived from the processors' accounts with a particular view to determining whether their profits increased under the boletta system, or diminished, or remained unchanged. Such cost data, unfortunately, are not available, Nevertheless, a fair idea of the changes that they would show can be gained from indexes related to manufacturing costs in general. Changes in the cost of materials and supplies very probably are well portrayed by an index number of the prices of industrial products, and changes in wage rates are fairly well portrayed, although perhaps in somewhat exaggerated form, by an index number of factory payrolls.[15] These indexes are charted on Figures 5A and 5B respectively (data in Table 2).

Changes in both millers' and bakers' margins appear to have diminished after 1930 by about as much as could be expected from the reduced cost of labor and materials. The bakers' margin, having a large element of labor in its composition, followed the downward curve of payrolls. The millers' margin, containing less of the labor element, did not decline by so much after 1930, its trend apparently conforming more to the trend of the prices of

[15] Data as to hourly wage rates in Hungary have only recently begun to be compiled. Payrolls ought to be satisfactory, however, if allowance is made for the downward bias due to layoffs. The downward bias due to layoffs during periods of low manufacturing activity is in part counteracted by the upward bias due to the inertia of salaries in the higher brackets.

industrial products, which exhibits a more gradual slope after 1930. This is in part explained by the more gradual slope of the trend of the prices of materials, and in part by the fact that in 1927 (three years prior to the inauguration of the boletta sys-

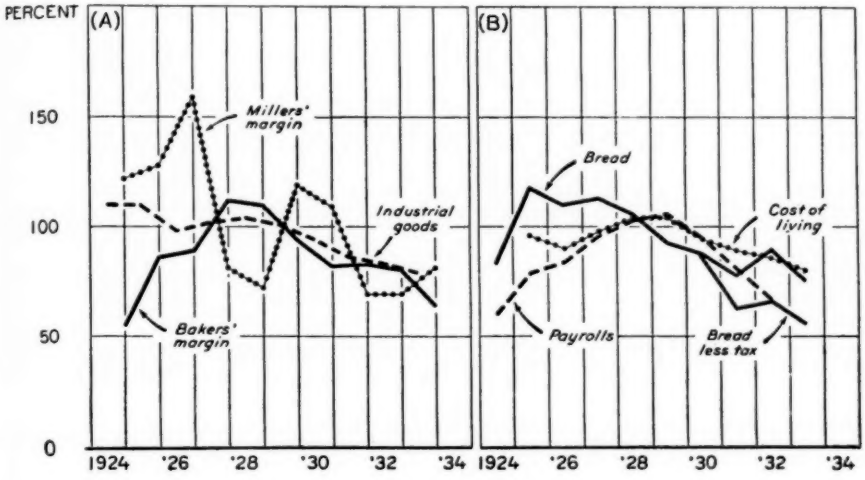

FIGURE 5.—Indexes of the price of bread, processors margins, prices of industrial goods, factory payrolls, and the cost of living (1927-30 = 100).

A. The millers' and bakers' margins and, up to 1928, prices of the materials and products of all industry. The latter series includes commodities of all industry up to 1928, and, from 1929 on, only products of industry other than cereals milling and sugar manufacture.

B. The price of bread both with and (after 1930) without the tax, factory payrolls, and cost of living, including heat, light, and rent.

tem), the millers' margin had already dropped to an exceptionally low level as evidenced by a drastic curtailment in milling capacity.[16] Although not entirely conclusive, the available statistical evidence seems to indicate that returns to the wheat processors over and above the costs of labor and materials were affected only slightly by the boletta processing tax. The millers and bakers may have borne a small part of the tax or they may have succeeded in passing all of it on to the consumer.

Benefits under the Boletta System

The boletta was instituted primarily for the purpose of benefitting the agricultural class of Hungary by providing an addition

[16] In 1926 and 1927 the larger mills reduced grindings to about one-fourth of capacity and at least four were converted into wood-working plants and warehouses. Cf. United States Department of Agriculture, Tech. Bull. No. 160, *Agricultural Survey of Europe, Hungary* (January 1930), by Michael, L. G., p. 31.

to the net income of the farmer. This purpose was accomplished largely through tax relief. It will be recalled that prior to July 1931, the whole of the boletta coupon was payable in tax credits only and thereafter half was payable in tax credits only and half

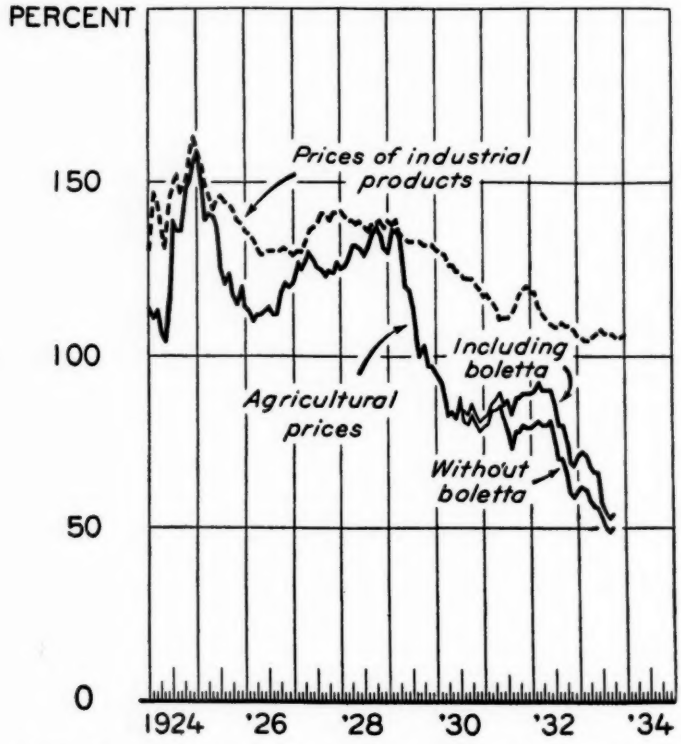

FIGURE 6.—Indexes of wholesale prices of the products of agriculture and livestock raising and of the prices of the products of industry (1913 = 100).

After August 1930 the index of agricultural prices is given in two forms: (a) including the value of the boletta as an addition to price and (b) not including the boletta. The boletta constituted a significant addition to farm income but by itself was not enough to restore the purchasing power of farm products to pre-war parity.

in tax credits if any taxes remained to be paid. Because many farmers were considerably in arrears, the half of the coupon that might have been redeemed in cash had frequently to be surrendered in payment of taxes.

The amounts received by growers (mostly of wheat though partly of rye) are given in the first line of Table 3. The separation into cash payments and tax credits given in Table 3 is largely nominal, having been made on the assumption that the half of the coupon was actually redeemed in cash during 1931-32 and 1932-33. The total for the three crop years under the boletta

was about 128,000,000 pengo ($22,000,000). An idea of what this amount meant in terms of an addition to each year's income may be gained from Figure 6, where the value of the coupon is charted as an addition to the weighted average wholesale price of agricultural products (1913 = 100). A substantial amount is seen to have been added to the farmer's income after July 1931. Of course, this amount fell far short of making up for the drastic decline that had begun in May 1929.

It was, however, of much greater significance in the direction of restoring parity between the prices of things that the farmer sold and prices of the things that he bought inasmuch as the latter had also declined somewhat after 1929. An index of the prices of things bought by Hungarian farmers is not available, but a good substitute is available in the index of wholesale prices of products of non-agricultural industry.[17] Dividing the index of agricultural prices by the index of industrial prices yields a measure of price parity somewhat above the true figure, but useful for observing how much the boletta contributed toward restoring parity.

During 1930-31 the purchasing power of the farmer's dollar as measured above was about 70 per cent of what it had been in 1913; if the boletta is included as an addition to agricultural prices, the farmer's dollar during 1930-31 was worth about 72 per cent of what it had been in 1913. In 1931-32, without the boletta it was worth 69 cents and with the boletta 78 cents. During 1932-33, it was worth 59 cents without the boletta and 70 cents with the boletta included. It is thus apparent that, if counted as an addition to the Hungarian farmer's price of wheat (and rye also to some extent), the boletta was of very material assistance in the direction of restoring the purchasing power of his products to pre-war parity; although, of course, being limited in application mostly to one commodity, it fell far short of restoring purchasing parity to the farmer's total output.

The Cost of the Boletta

The funds for paying the boletta coupon bounty were derived from a processing tax, the burden of which, it has been seen, was largely shifted to the domestic consumer of bread. It will be recalled that the amount of tax chargeable against the boletta was as follows: 18.6 cents during 1930-31; and 59.3 cents during

[17] The index employed here includes all products prior to 1929 and thereafter includes the products of industries other than cereals milling and sugar manufacturing. It is, of course, not 100 per cent accurate as a standard of comparison, for lacking the inertia characteristic of a general retail price index, it declines more in a period of general depression.

1931-32 and 1932-33. In order to arrive at an estimate of the total amount of the boletta tax levied on the consumer these amounts are to be multiplied by the number of bushels consumed in Hungary each year. Such a figure is not available, but it is estimated[18] that during the period under analysis the annual consumption of wheat by the urban population of Hungary was close to 16,000,000 bushels. On this basis the tax collected from consumers was about $2,800,000 during 1930-31, and about $9,500,000 during 1930-31, and about $9,500,000 during 1931-32,

TABLE 3. ESTIMATED EXPENDITURES, RECEIPTS, AND YEAR-END BALANCES OF THE BOLETTA IN HUNGARY

(*In millions of dollars*)

Item	1930–31			1931–32			1932–33			Grand Total
	Cash	Tax credits	Total	Cash	Tax credits	Total	Cash	Tax credits	Total	
Expenditures:										
Growers' bounty	0	6.5	6.5	5.0[a]	5.0	10.0	2.9[a]	2.9	5.8	22.3
Exporters' rebate	2.5	—	2.5	9.1[b]	—	9.1[b]	4.1	—	4.1	15.7
"Relief action"	0	0	0	1.1	0	1.1	0	0	0	1.1
Total	2.5	6.5	9.0	15.2[a]	5.0	20.2	7.0[a]	2.9	9.9	39.1
Receipts from sale of bolettas	7.0	—	7.0	16.8	—	16.8	14.5	—	14.5	38.3
Balance, end of year	+4.5	−6.5	−2.0	+1.6[c]	−5.0	−3.4	+7.5[c]	−2.9	+4.6	−0.8

Bureau of Agricultural Economics, Foreign Agricultural Service Division. Expenses of operation are not included. Conversions from Hungarian currency are approximate, being at the rate of 1 pengo = 17.45 cents.

[a] Nominal figure. Cash is smaller than this amount.

[b] Includes outright premium of 12 cents per bushel on 5,800,000 bushels of wheat (including flour exported from July 20 to October 18, 1931.

[c] Nominal figure. Cash is larger than this amount.

and $9,500,000 during 1932-33. The three-year total amounted to $21,800,000, as against the sum of $22,000,000 which is estimated to have been received by the growers. But in addition to the burden of the boletta itself consumers had to share the costs of administration along with the beneficiaries of the boletta, for these costs were assessed out of the national treasury. An estimate of these expenses is not available; but reports indicate that they must have amounted to a considerable sum. The government is said to have doubled the import duties on coffee, tea, and cinnamon, and to have increased the prices of tobacco (a government monopoly in Hungary) and postage stamps for the purpose of meeting the added burden on national finances.

An analysis of the expenditures, receipts, and final balances of the transactions of the boletta bounty and tax, exclusive of other related costs and receipts, is given in Table 3. The data as to export rebates are not official, being instead estimates based up-

[18] U. S. Department of Agriculture, Foreign Agricultural Service Division, Danube Basin Office, *Special Report No. 153*, p. 3.

on the number of bushels of wheat (and rye) exported; and some of the data, while coming from official sources, are only rough estimates. Included among the expenditures for 1931-32 are two items amounting to about $1,800,000, which constituted but passing phases of the program. One was the outright cash premium of 12 cents per bushel which was paid on wheat exports from July to October 1931. The other, which has not previously been mentioned here, was the "relief action" involving an expenditure of a little over $1,000,000 for the supplying of bread to the needy. The funds for this action were taken from the boletta receipts and in all probability quite properly so, inasmuch as the need for relief was occasioned in part by the maintained price of bread. (See Figure 5B and discussion on p. 403.)

At the close of the first year of operations the boletta account was in arrears to the extent of $2,000,000 as compared with the total benefit of $6,500,000 paid out to the grower. During the second year, the government greatly increased the bounty to the farmer and at the same time increased the selling price of the boletta (See p. 391), so as to yield a surplus out of which to pay for the exporter's rebate. Despite this precaution the boletta account again showed a deficit at the end of the second year, amounting to $3,400,000 compared with total payments of $10,000,000 to the farmer. But in the third year the government reduced the amount of the bounty and correspondingly increased its own share in the boletta, with a consequent surplus of $4,600,000 at the end of the year. This surplus apparently was almost enough to wipe out the deficits of the first two years. But lacking information as to costs of administration, the picture is incomplete. Clearly at the close of the crop year 1932-33, the government had a considerable deficit to make up before it could completely close the books on the boletta. Also a large part of the necessary taxation would have to come from the non-agricultural population, who had already paid for most of the cost of the boletta in the form of a higher price for bread.

To be sure, the boletta processing tax did little more than prevent a sharp drop in the price of bread. (See Figure 5B.) During the three years after July 1930, the price of bread averaged 3.1 cents a pound as compared with 3.7 cents a pound during the preceding three years. Without the tax, the price of bread would have declined to something in the neighborhood of 2.5 cents a pound.

Some very significant results are disclosed when the indexes of the price of bread, with and without tax, are compared first with

the index of factory payrolls and then with the index of the cost of living. (See Table 2 and Figure 5B.) Factory payrolls furnish an estimate of consumer purchasing power. When payrolls are low, the prices that the consumer has to pay should also be low in order to maintain equilibrium. Comparing the index of payrolls with the price of bread, ex-tax, shows that the consumer would have had considerably the better of it during 1931, and about an even break during 1932 if the boletta processing tax had not been imposed. Under the tax the situation was altered; he was a little ahead in 1931, but considerably at a disadvantage in 1932. On the other hand, comparing the price of bread with the cost of other items in the consumer's budget reveals that if the tax had not been imposed, the price of bread would have been below parity with the other items of the cost of living by a very large margin. The addition of the tax just about brought the price of bread up on a par with the other items.

In the final analysis, so far as the consumer was concerned, the imposition of the processing tax on wheat had the immediate effect of prolonging the ever-widening disparity between his income and his expenditures, which had been brought about largely by the severe recession in business activity. In so far as the stabilized price of wheat resulting from a stabilized price of bread contributes to induce a revival of industrial activity, the consumer will benefit. If the restoration of payrolls is hastened through the restoration of farm purchasing power, the non-agricultural consumer may eventually profit from the agricultural price-supporting measures undertaken in Hungary during the three years July 1930 to June 1933.

The Boletta System in Relation to the National Economy

From the standpoint of the national economy the chief benefit of the boletta was its contribution in the direction of restoring equilibrium between the purchasing power of the agricultural consumer and the prices of the things he bought. It also contributed to the maintenance of the export income of the country as a whole and provided a means of keeping up tax revenues. The chief defect of the system was that it contributed to increasing the disequilibrium between the cost of living of the non-agricultural consumer and his purchasing power. But it is questionable that very much of the latter disparity should be charged against the farm relief program inasmuch as the leading cause was the drop in payrolls occasioned by the general industrial depression. The fault lies rather with other elements in the national

economy more intimately connected with the stabilization of employment in non-agricultural industry.

The order of events in the immediate past would seem to provide some justification for giving consideration to the restoration of farm purchasing power parity first. The drop in agricultural prices, it will be remembered (Figure 6), had its inception in March 1929, and came with great suddenness; the index fell by 30 points in 1929, while at the same time the index of prices of industrial products remained practically constant. The decline in payrolls, while it got started in 1929, did not show a serious decline until the end of 1930. Two years were required, from 1929 to 1931, to bring a decline of 25 points; and the decline in payrolls was for a while accompanied by a corresponding decrease in the cost of living, which further delayed the appearance of the disparity between purchasing power and the prices of things bought.

INFLATION AND THE FARMER

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Does the farmer profit from inflation? Does his fortune so rise and fall with the price level that, as Professors Warren and Pearson state, a doubling of the price level would assure the farmer a prosperous existence? Is inflation the farmer's salvation, will he reach the promised land via irredeemable paper money, or does that road lead straight to rural ruin?

These questions have been warmly debated in Congress, college classrooms and cross-roads stores as well as in the daily press and our popular periodicals. Opinions on the subject, though expressed with oracular assurance by all factions, are founded more on notion than on fact and generally vary with geographical location. A majority of the residents of our Midwest have felt that inflation, at least in a so-called "mild" form, was the answer to their prayers. Most Easterners, Wall-Streeters and European economists, on the other hand, have held a different and contrary view. As an example, Alfred Lansburg, editor of *Die Bank* (Germany), stated that our farmers would suffer from inflation since "it is probable that most increases in prices will occur, not in farm products, but in consumption goods which the farmers are obliged to buy."

So far this controversy has been more productive of heat than light. Whether our farmers would profit by a marked inflation of our currency need not, like next week's weather, be anybody's guess. On this question there exists a wealth of evidence from previous experiences with currency depreciation both in this country and abroad. It is time that we read the record and reviewed this evidence. Though conditions in this country and at this time may not be exactly the same as those prevalent at the time other inflations took place, still it may be possible to draw some general conclusions from the histories of inflations that would indicate the answer to our present perplexity.

To begin at home, how did the American farmer fare during the debasement of our currency in the Civil War period? Professor Wesley Mitchell answers this question in his authoritative *History of the Greenbacks*. After calling attention to the fact that for the North a full statistical record of all important farm products is available, he states: "It seems safe to conclude from these figures that the farmers of the loyal states were among the unfortunate producers whose products rose in price less than the

majority of other articles, and that from this standpoint they were losers rather than gainers by the paper currency. Of course, it is possible that the farmer's loss from this inequality of price fluctuations might be more than offset by his gains at the expense of laborers, landlord, and lending capitalist.'"[1] But Professor Mitchell does not believe that this was the case. He points out that the American farmer of the Civil War era was largely his own landlord and laborer, if not his own creditor, and so he concludes that "while the general effect of the paper standard was in the direction of increasing profits, it seems very doubtful whether farmers as a whole did not lose more than they gained because of the price disturbances."

In his study of *Gold, Prices and Wages from 1860 to 1880* (p. 48), Professor Mitchell again points out that "the prices of farm products rose less promptly under the stimulus of the greenback issues than did the prices of other commodities. Cotton, tobacco, and rice of course are exceptions to the rule." That the prices of these three products were quick to respond to increases in the currency was to be expected since they were in large part exported, and there is little doubt but that, when international trade is fairly free from restrictions, the depreciation of a country's currency temporarily stimulates that country's exports.

Professor Alvin Hansen's study of the effect of price fluctuations upon agriculture in this country during the last century confirms Professor Mitchell's conclusions.[2] Professor Hansen compared an index of farm prices with an index of the prices of all commodities and found that the purchasing power of farm products in terms of the general price level more than doubled from 1820 to 1920. In other words, the American farmer could buy more than twice as much with the money he received for a fixed quantity of his products in 1920 as he could in 1820. The general trend of the purchasing power of farm products was steadily upward during this period with one single exception. In the sixties, during the greenback inflation, there was a sharp downward break in the trend, farm prices declined about 20 per cent relative to other commodities though the prices of both rose, and after that the trend rose more slowly until toward the end of the nineteenth century, when the rate of increase in the purchasing power of farm products again rose to over 1 per cent a year.

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[1] A History of the Greenbacks (1903), p. 388.
[2] "The Effect of Price Fluctuations on Agriculture" in the *Journal of Political Economy*, April 1925, pp. 198 ff.

Turning now to the currency experience of European countries during the post-war period, what were the economic consequences of inflation for the European farmer and how do they compare with the effects of our Civil War inflation upon American agriculture?

In those European countries for which adequate information is available, in Poland, Austria, Germany and France, there was a disparity of prices unfavorable to the farmer during currency inflation after the War. Dr. Albrech Schubert reports that in Poland the inflation caused a sharp unbalance of price between agricultural and industrial products to the detriment of the farmer.[3] The prices of farm products fell relative to those of factory products. For example, in October 1923 the price of food in gold sank to 49 per cent of the peace price (presumably 1913), while the price of textile goods rose to 175 per cent of the peace price. According to Dr. Schubert, this unfavorable price relationship was more pronounced in Poland than in Germany, both of which were suffering from inflation at the same time. The reason for this he claims was that industrial production is less important in Poland and industry there recovered much more slowly after the War than in Germany. He attributes the weakness in farm prices during inflation in part to the fact that inflation saps the purchasing power of the middle class which consumes such a large part of the farmer's products.

Professor W. F. Ogburn and William Jaffé state in their survey of the economic development of post-war France that "throughout practically the whole post-war period and especially during the acute inflation crisis, the price index number of agricultural products remained considerably below that of industrial materials."[4] In the first quarter of 1926, for example, the composite price of 20 foodstuffs included in the *Statistique Générale* was but 6.3 times the average price for the years 1901 to 1910, whereas the average price of 25 industrial commodities in the same index number had risen 8.1 times. Another fact shows that during the process of inflation in France agriculture was a less profitable pursuit than manufacture. In the years of acute currency depreciation, 1925 and 1926, less arable land was cultivated than in the preceding years or before the War, and there was a tendency for farmers to abandon the farm for the city.

Various writers state that during depreciation of the mark in

[3] Die Entwicklung der Posener Landwirtschaft seit 1919 im Rahmen der gesamten Staatswirtschaft, Poland (1929), pp. 62 ff.

[4] The Economic Development of Post-War France (1929), pp. 174, 175.

Germany the prices of industrial products responded quickly and rose rapidly, whereas "the prices of farm products on the other hand followed the depreciation more slowly," showing in gold marks at times ridiculously low figures.[5] During most of the time, farm prices in terms of coal and iron were far below their pre-war figures. It is true that the German farmer prospered during a part of the inflation period. But the only reason for this was that his costs, such as taxes, interest, wages, the price of land, horses, fertilizer, etc., did not keep pace with the prices of his products. However, in 1919 and again shortly after the beginning of 1923, when the tempo of inflation increased, the German farmer's costs outran the prices of his products, and the now familiar phenomenon of *Preisschere,* or farm price crisis, took place.

We have surveyed the experience of the farmers of various nations under various degrees of inflation. Following the progress of price curves through these various currency inflations, we found that the prices of farm products for domestic consumption do not respond so readily to currency debasement as do most other prices. In other words, the price disparity or inequality that the farmer complains of during marked deflation also took place during the severe inflations that we have reviewed. Of course that is not the whole story. The disparity of prices is only one, though probably the most important, of the farmer's present-day difficulties. Its effects may be offset by the effects of inflation on debts, taxes, and the farmer's operating costs, although Professor Mitchell stated that this was not the case during the greenback inflation in this country.

Was that the case in post-war Europe? In Germany, though the average farmer's gross income fell in terms of the dollar, his interest and taxes, which formerly absorbed one-half to two-thirds of his gross income, fell so much further that the net profit left over for the average farmer to spend or invest actually increased. Did he invest this saving profitably? In almost every case the answer was, no. In Germany, Poland and France, writers report that farmers, with few exceptions, did not use inflation to their own advantage. Few farmers borrowed and invested in farm property which reached ridiculously low figures relative to commodity prices during the various inflations. Though the farm-

[5] Aereboe, Friedrich, Der Einfluss des Krieges auf die Landwirtschaftliche Produktion in Deutschland. Carnegie Foundation (1927), p. 119; also pp. 115 ff. See also: Meyer, Lothar, Die deutsche Landwirtschaft waehrend der Inflation und zu Beginn der Deflation, Germany (1925); Buste, Ernst und Brandt, Karl, Die deutsche Agrarkrisis and ihre Ueberwindung, Germany (1924).

ers were advised how to safeguard their savings, they were slow to see the light and to act accordingly.[6]

The farm mortgage debt in Germany before the inflation amounted to around 16 billion marks—an annual interest charge of 600 million marks against farm income. The inflation practically wiped out this debt though in 1925, after stabilization of the mark, 25 per cent of the principal of these former mortgages was restored by law. Though the farmers' mortgage indebtedness was decreased 75 per cent or more in value by inflation, that is far from the complete picture. Interest rates for loans on farm mortgages rose during inflation and even a year or two after stabilization stood at 20 and 30 per cent compared with a prewar figure of between 4 and 5 per cent. Interest rates were so high that farmers could not afford to withhold their produce for better prices but were forced to dump it on the market and depress prices further.[7]

It is well to remember in this connection that, according to recent estimates, 58 per cent of the nation's farms are free from mortgage debt and that the farm mortgage debt is but 25 per cent of the value of all farm real estate.

Inflation brings about a rise in all interest rates, but the rise was especially severe in agriculture in Germany and Austria because most of the institutions that accumulate savings and lend capital on farm property as security, such as savings banks and life insurance companies, were almost completely wiped out by inflation.[8] Since farm-lending institutions suffered so severely from inflation, there were few funds available for farm investment. During and following the inflation, the credit situation in German agriculture became critical. A credit crisis set in, and even today German agriculture suffers from a shortage of credit. Furthermore, just as soon as the mark was stabilized the Government began to fill the treasury that had been emptied and kept bare by inflation. The tax burden on land increased enormously. On top of this, the prices of most of the important farm products fell while farm wages and the prices of commodities the farmer buys rose and remained high relative to the prices farmers received for their products.

The farmer's market had been undermined by the impoverishment of the middle class through inflation. Because interest rates

[6] See Aereboe, *op. cit.*, and Schubert, *op. cit.*

[7] See Brandt, Karl, "Increase in Farmers' Indebtedness in Germany and New Methods of Individual Credit Control" and C. von Dietze, "The German Agricultural Situation" in Proceedings of the International Conference of Agricultural Economists, Ithaca (1930).

[8] Kallbrunner, Hermann, Die Wiederaufbau der Landwirtschaft Oesterreichs (1926), pp. 23ff.

were so high, he was forced to dump his products on the market. A price crisis accompanied the crisis in agricultural credit. The disparity of prices forced farmers to go into debt again. In 1930 agricultural indebtedness in Germany stood at a figure of 12 billion marks (three-fourths of the pre-war figure), and the interest charge on farm income amounted to 1 billion marks a year on this debt, or two-thirds again as much as before the war.[9]

Much the same thing happened in Poland. No sooner had both of these countries stabilized their currencies than they had an agricultural crisis on their hands. In Poland the farmers likewise suffered from credit starvation and unfavorable prices. New debts took the place of old ones until in 1930 interest and taxes absorbed 40 per cent of the gross income from agriculture in Poland, and the average interest rate on farm indebtedness was 11 per cent.[10]

In France inflation also caused a scarcity of capital, an increase in interest rates and a more than proportional increase in taxes.[11] However, since the franc did not fall so far in value, the effects of its depreciation were not so pronounced and painful.

The farm mortgage debt in terms of gold francs fell from 2½ billion before the inflation to 700 million francs, but land values did not increase in proportion to the decrease in the gold value of debts nor the increase in prices and values in general. M. Michel estimates that farm real estate was worth but twice as much in 1925 as before the War, whereas commodity prices had increased 5 times. A year later, when the wholesale price index for foodstuffs stood at 7 times the pre-war figure, farm property values, according to M. Caziot, were but 2½ times as high as before the War. In other words, the farmer's ability to borrow on his property did not keep pace with the rise in prices.[12]

Even if the farmer had correctly perceived the processes of inflation, with this lag in land values he would not have been able to borrow heavily on his property in order to take advantage of the decline in the value of the franc. As a matter of fact, most French farmers did not understand what inflation was all about. Consequently the total value of farm mortgages in paper francs was but 300 million more at the beginning of 1926 than in 1913 when the French farm mortgage indebtedness amounted to 2,600 million francs.

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[9] Hermes, Germany in the Agricultural Crisis. Economic Committee, League of Nations (1931), Vol. I, p. 171.
[10] Seraphim, P. H., Die Agrarkrise in Polen, Germany (1932).
[11] Ogburn and Jaffé, *op. cit.*, pp. 177, 494 and 495.
[12] Ogburn and Jaffé, *op. cit.*, p. 178.

The relatively slight rise in real estate values was undoubtedly due in large part to a doubling in the rate of interest and to some extent to the increase in taxes. An increase in interest rates decreases property values—the market value tending to correspond to the capitalization of the present and expected income from the property at the prevailing interest rate.

In each case of inflation in all of the countries reviewed, the effects, so far as the farmer was concerned, have been strikingly similar, and the more severe the inflation, the more these results have been magnified so that he who runs may read. In each and every instance there has been a disparity of prices unfavorable to the farmer producing for the domestic market, interest rates and taxes have increased, and land values have not increased in proportion with the increase in prices and other capital values.

This does not mean that a little inflation, though a dangerous thing, might not temporarily benefit some farmers. On this question we have little data, for fabricated inflations in the past have been far from "mild." A moderate or gradual rise in the price level (fall in the value of the dollar), might well, under certain conditions, be to the benefit of farmers producing for local consumption. That would certainly be the effect if thereby manufacturing was so stimulated that the farmer could more favorably exchange his crops for his share of an increased industrial output. But an inflation at all comparable with any of those mentioned above would surely be detrimental to the best interests of American agriculture.

THE INCIDENCE OF THE COST OF THE AAA CORN-HOG PROGRAM[1]

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There is much uncertainty in the minds of many people as to the incidence of the cost of the AAA crop and livestock reduction programs. Some feel that the cost is borne by the ultimate consumer; others believe that it is borne by millers, packers and other processors; still others think that it is borne after all by the farmers themselves; while a few may hold that the program involves no burden or loss to anyone, but is a clear net gain for all.

Which of these views is correct? No single answer can be given for the program as a whole; the answer for wheat may be different from the answer for cotton, or for hogs. The different commodities need to be considered one at a time. The discussion in the present paper will be limited to one commodity, hogs.

The Hog Program is Self Financing

The aim of the corn-hog program of the AAA is to increase the income of corn and hog farmers. The program is to finance itself; the additional farm income is to be provided from a processing tax on hogs, and from the higher prices which farmers will receive from their reduced production of corn and hogs. Specifically, the federal government is contracting to pay hog producers who reduce their crop 25 per cent, a benefit payment of $5.00 per head on the remaining 75 per cent of their hogs. The government is obtaining funds for this purpose by levying a processing tax on hogs. This processing tax has been gradually increased from 50 cents, when it was first applied last November, to $2.25 since March 1, 1934.[2]

The increased farm income envisioned under the corn-hog program must come from somewhere.[3] Who will actually bear the burden of providing it?

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[1] Journal Paper No. J-175, Iowa Agricultural Experiment, Project No. 10. The author is greatly indebted to Mr. Keith Kirkpatrick, student at Iowa State College, who prepared all the statistical tables and graphs and also made helpful criticisms of the text. Valuable suggestions (and recent data) were also contributed by Mr. Oris V. Wells, of the Production Control Section of the AAA, Mr. Frederic V. Waugh and Mr. Preston Richards of the Division of Statistical and Historical Research, and Mr. Gerald B. Thorne of the Corn and Hog Section of the AAA.

[2] D. A. FitzGerald, "Corn and Hogs Under the AAA," The Brookings Institution, p. 82, 1934.

[3] There is some reason for believing that after the lapse of a period of time, a partial restoration of the purchasing power of agriculture would lead to a more balanced condition between agriculture and industry, to an increased production on the part of both, and thus to an increase in the purchasing power of both. But in the initial stages, during which the production of agriculture is being cut down, it seems that the increased purchasing power of agriculture would simply represent a transfer of existing purchasing power from other groups. That is, agriculture would get a considerably larger share of a somewhat reduced total purchasing power (reduced by the reduction in agricultural production).

To answer this question, one has to dig below the surface. The processing tax, for example, is paid over to the government by the packers and other processors. But the burden of the tax does not necessarily fall on the packers.[4] If the packers pass the burden on to consumers by charging higher prices for meat, then the consumers really pay the bill. Or, if the packers pass the burden back to hog producers by paying lower prices for hogs, then corn and hog farmers pay it themselves.

The objective of this paper is to determine who really provides

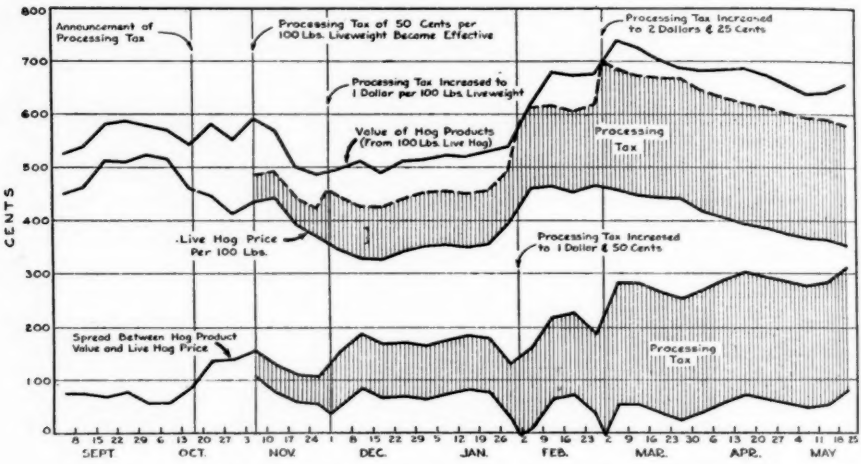

FIGURE 1.—Packer's Margins at Chicago, September 1933 to May 1934

the additional income that is to flow to farmers as a group. This objective cannot be fully attained because of the limitations of the data available, the small amount of research done, and the complex ramifications of the whole subject. The ramifications become gradually less important, however, as they branch out further and further; the main outlines of the problem can be dealt with in comparatively brief compass. The paper, therefore, will outline only broad and tentative answers, and indicate the lines along which further research is needed before complete and exhaustive answers can be given.

The Incidence of the Hog Processing Tax

Let us take up the first question, as to whether the packers pay the tax out of their own operating margins. This question can be answered comparatively easily. A chart published in the April,

[4] If we ignore, for the moment, the effect of reduced hog production on hog prices. That question is considered at length in later sections of this paper.

1934, issue of this JOURNAL[5] provides a background for the study of packer's margins. The figure shows the prices that packers paid for hogs per 100 pounds at Chicago and the prices that packers received for the product of 100 pounds of hog from January 1, 1924 to September 1933. It shows that the margin has been slowly declining since 1926. It shows also that there is a seasonal fluctuation in the margin, although most of the fluctuation disappears when the price of hogs is lagged one month.

The Secretary of Agriculture announced the hog processing tax in October 1933. The packers' margins from the time of that announcement to the present are shown in Figure 1.[6] This chart shows how the margin between the two prices has increased with the increase in the processing tax levied on the packers. The margin for the most recent month (May) is $2.15 wider than for the months preceding the imposition of any tax last fall. The increase in the margin is practically identical with the amount of the processing tax. One thing then is evident. The packers are not bearing the burden of the tax directly by taking it out of their operating margin. They are either passing it on to the consumer or else back to the producer, or a measure of both.

Which way is the packer passing the tax, then—forward to the consumer in the form of higher prices for meat,[7] or backward to the producer in the form of lower prices for hogs?

The Tax is Not Shifted to the Consumer

It might be thought that, in the early stages of the corn-hog program before hog supplies are reduced, the tax would be passed on to the consumer. But study of retail prices since the tax was applied will not tell us whether it has been thus passed on or not. The question cannot be answered simply by plotting the course of retail prices of pork products to see whether they have risen since last October. For industrial conditions have improved since then, and retail pork product prices would have risen in any case, tax or no tax, on account of the improvement in the demand for meat.

But the question can be answered (although the answer is only preliminary, pending further research) by referring to the concrete market data which show the nature of the demand curve

[5] F. V. Waugh, "Margins in Marketing." JOURNAL OF FARM ECONOMICS, April 1934, p. 240.

[6] "Agricultural Adjustment." Report of Administration of the AAA, May 1933 to February 1934, p. 245. Recent data direct from Gerald B. Thorne, originally from C. A. Burmeister.

[7] Throughout the paper the discussion centers on packers' margins, with little reference to other distributive margins (for example, those of the retailer). There are two reasons for this. The processing tax is levied on the packer, not on the retailer; the packer is, therefore, most directly affected. And it is likely that retailers' margins will remain substantially unaffected by the program.

for pork. For simplicity, the question will be discussed first without taking into account the effect of the federal government's purchases of light weight pigs in the late summer of 1933. The effect of those purchases will then be brought in later.

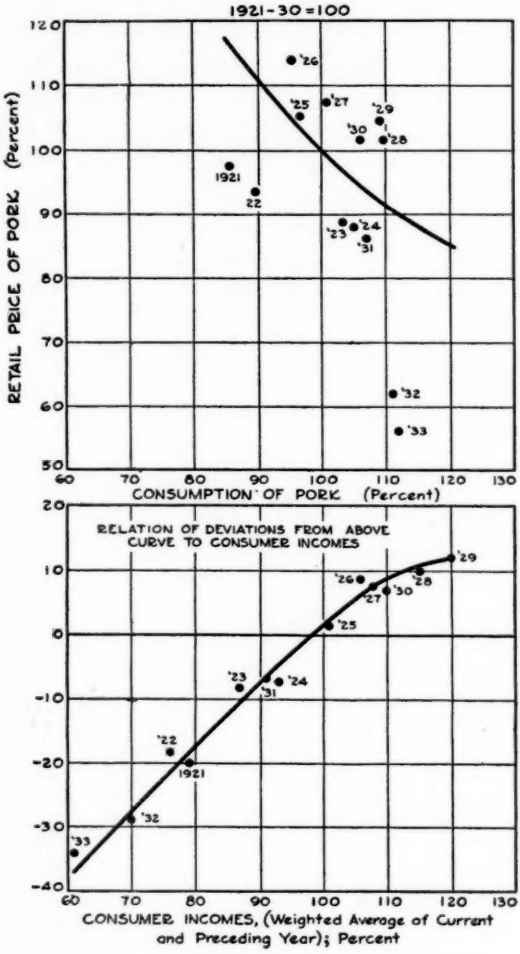
1921-30=100
RETAIL PRICE OF PORK (Percent)
CONSUMPTION OF PORK (Percent)
RELATION OF DEVIATIONS FROM ABOVE CURVE TO CONSUMER INCOMES
CONSUMER INCOMES, (Weighted Average of Current and Preceding Year); Percent

FIGURE 2.—Relation of Retail Price of Pork to Consumption of Pork, 1921-1931

The consumer's demand curve for pork, based on data from 1921 to 1931, is shown in Figure 2.[8] This chart shows that the consumer's demand curve for pork is "unilastic"; it has an elasticity of unity. It is obvious, from the nature of this demand

[8] This chart is similar to the chart shown in an article by E. J. Working, "Demand Studies During Times of Rapid Economic Change," *Econometrica*, April 1934, p. 144. The data for this chart are published in Senate Document No. 184, 72nd Congress, 2nd Session, "Economic Situation of Hog Producers," Table 9, p. 82, 1933. Recent data from Preston Richards.

curve for pork, that if packers attempt to pass on the tax by raising prices to consumers, consumers will simply buy less pork. The pressure of excess supplies piling up in storage will then quickly bring the price down again.[9] Packers (or any other producers or processors) can set the quantity they wish to sell, but the public then sets the price at which it will take that quantity; or packers can set the price at which they will sell, but the public then sets the quantity it will take at that price. Any attempt to raise prices simply results in unsaleable surpluses accumulating until the pressure of those surpluses brings the price down again to a figure that will move all the product into consumption.[10]

In the first stages of the corn-hog program, therefore, it is evident (1) that the packers are not absorbing the tax, and (2) that they are not passing it on to the consumer. There is only one place left where the effect of the tax can show up, and that is in the market price that the farmer receives for his hogs. In the first stages of the corn-hog program, this open market price will be depressed by approximately the full amount of the tax.

The Tax is Shifted to the Producer

Why is it that when the tax is driven like a wedge between the price the consumer pays for meat and the price the farmer receives for hogs, the consumer's price does not budge, but the farmer's price takes all the shock?

The answer is that when the price of pork is raised, the consumer responds immediately by buying less pork. The consumption of pork falls off, and the threat of unsold supplies brings the price down again. And the falling off in consumption takes place at once; the only time involved is that which is needed for the consumer to change his mind from purchasing pork to beef, mutton, eggs, or other foods.

But the situation is different when the tax is passed back to the producer in the form of lower prices for hogs. Ordinarily the producer of hogs does not respond immediately by producing less hogs. Even if he cuts down his hog production at once, the flow of hogs to market from the pigs already in the feedlot and the sows already bred would continue unabated for nearly a year.

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[9] In fact, since a large proportion of pork products is fresh pork (which cannot be stored) it is the *threat* of unsaleable supplies rather than the actual pressure of actual surpluses, that brings or rather keeps the price down.

[10] Mr. Frederick V. Waugh commented in a letter to the author just before this article went to press, "Your conclusions that the tax is not at first shifted to the consumer appear to be based mainly on theoretical considerations. I think it might be well to point out somewhere in this section that these conclusions are verified by a study of market data. For example, the retail price of pork products in November, December and January was almost exactly in line with the prices we would ordinarily expect considering the volume of sales of pork products and consumer incomes."

In other words, the producer's short time supply curve "going down" is practically a vertical line.[11] And in this situation the producer bears the full amount of an increase in the costs of distribution.

Were it not for the fact that the federal government purchased and slaughtered six million young pigs late last summer, hog producers would be sending a full run of hogs to market for almost a year after the tax was first applied. And during that time the market price of hogs would be depressed by approximately the full amount of the tax. In that sense, then, the burden of the tax would fall on hog producers as a group; though it must be remembered that the purpose of the tax is to provide funds for benefit payments to hog producers, and that these funds would be flowing back to the hog producers approximately offsetting the burden of the tax. The federal government would simply be taking money out of the hog farmer's pocket with one hand and putting it back in another pocket with the other.

Participating and Non-Participating Producers

How would the burden of this procedure be distributed among the hog farmers, considered as a group? These producers who had signed corn-hog contracts would be recompensed by the receipt of hog benefit payments; but those who had not signed up would find that the open market price of hogs had been depressed by approximately the full amount of the processing tax. For those who had signed up, the payments would offset the effect of the tax, partially, fully, or even more than fully, depending upon the proportion of all farmers who signed up under the plan, and upon the expense of administering the plan. If, for example, 75 per cent of all hog producers signed up, the tax would need to be only 75 per cent as great as if all producers signed up and were all entitled to benefit payments; in that case (neglecting expenses of administration) the benefit payments to each contracting producer would be 33 per cent greater than the loss he would suffer through the depressing effect of the tax on the price of his hogs. The situation for other percentage sign-ups, with appropriate deductions for administrative expenses, can be similarly worked out.

The tax, therefore, acts as a penalty upon the farmer who does not participate in the program, offset by whatever advantage it may be to him to be free to maintain or expand his previous hog

[11] "The Burden of Increased Costs of Distribution," JOURNAL OF FARM ECONOMICS, October 1932, pp. 650-661.

production. If the percentage sign-up is small, the tax will be small and the penalty not great. If the sign-up is high (as it gives promise of being) the tax will be high (as it is) and the penalty severe. Those observers who object to the program as a whole will probably regard this feature of the program as objectionable coercion; those who approve of the program will no doubt regard

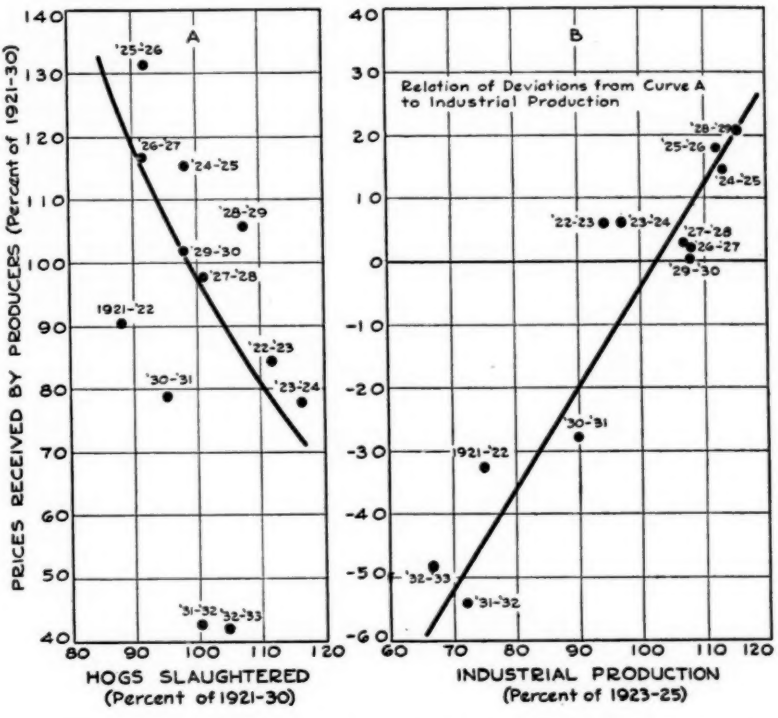

FIGURE 3.—Relation Between Supplies and Prices of Hogs in the U. S.

this same feature as one of its strong points, since it insures that the chief benefits will be restricted to those who participate.

Incidence of the Effect of Reduced Hog Production

The incidence of the processing tax is one thing. The incidence of the effect of the proposed reduction of hog production is another. And it requires more involved analysis. The question then becomes one, not of changes in price per hundred pounds received by the producer for hogs, nor of margin per hundred pounds taken by the packer, nor of price per pound paid by the consumer for pork. It becomes instead a matter of *price times*

quantity, a question of total volume of hog income received by hog producers, of total volume of margin taken by packers, and total volume of money paid by consumers for pork.

Given time to reduce their production, hog producers can increase their total income by raising fewer hogs. The reason they are able to do this is shown in Figure 3. This chart shows the effect of variations in annual hog supplies upon the price of hogs.[12]

This chart is different from Figure 2 shown earlier. Figure 2 shows the *retail prices* paid by *consumers* for different quantities of *pork.* Figure 3 shows the prices paid by *packers* for different quantities of *live hogs.* The two curves are different; their differences are discussed later in footnote 15.

Figure 3 shows that (during the period of years covered by the data) an increase of 10 per cent in the supply of hogs depressed the price about 20 per cent; and conversely, a decrease in the supply raised prices about 20 per cent. This means that if hog producers had cut production to 90 per cent of average, the price per 100 pounds would have risen to 120 per cent of average. Hog producers would, therefore, receive 90 times 120, which equals 10,800, or 108 per cent of the amount they would have received for an average supply of hogs. That is, hog producers would receive 8 per cent more money for their small 90 per cent sized crop than they would have received for an average crop.

The relation between hog supplies and hog prices shown in Figure 3 may have changed somewhat during the current depression. The preliminary research embodied in Figure 3 indicates that if any change has occurred it has been slight. If further research confirms this finding, and shows that the curve has remained substantially as it was before the depression (except for its obvious downward shift) then the percentage effect of a reduction in the production of hogs upon the gross hog income of hog producers should be roughly the same now as before the depression. If hog production is cut 15 per cent, gross income would rise 10.5 per cent. If it is cut 20 per cent, then gross income would rise 12 per cent. Further reductions would probably begin to exercise a progressively smaller upward influence upon gross income.

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[12] The data in this group of charts are compiled as follows:

Federal Inspected Hog slaughter: U.S.D.A. Yearbook, 1933, p. 605 (recent data from crops and markets). Numbers by months multiplied by average live weight by months, giving pounds of live hogs slaughtered by months. Totaled on a hog year (October-September) basis.

Weighted Average price per 100 lbs. Received by Producers. U.S.D.A. Yearbook, 1933, p. 605 (recent data from Crops and Markets).

Industrial Production: Federal Reserve Bulletin monthly index of industrial production, adjusted for seasonal variation. Hog-year basis. Average of current year and preceding year, with current year given a weight of 2. All data finally expressed as indexes on 1921-31 average base.

Effect of Government Slaughter of Light Weight Pigs in 1933

We are now in a position to discuss the effect of the federal government's purchases of light weight hogs in 1933. These purchases amounted to 6,200,000 head, equivalent to about 15 per cent of a normal winter's run of hogs.[13] One might think, therefore, that the removal of this number of hogs from the winter market of early 1934 would raise the price of hogs 30 per cent.

This estimate, however, is almost certainly too high. When packers buy hogs in the winter, they take into account not only the supplies available then, but also the supplies likely to be available later on in the summer when their surplus pork will be coming out of storage. That is, one should estimate the percentage that 6,200,000 head of hogs constitutes of a normal run of hogs, not just during the winter months, but during the nine or ten winter and following spring and summer months. This percentage would be 10 or 12, rather than the 15 given above. And this would raise the price 20 to 24 per cent rather than 30 per cent.

From January 1934 onward, hog prices at Chicago have been running at or below $4.00 per hundred pounds. The reduction of 10 or 12 per cent in hog supplies, raising prices 20 or 24 per cent, may therefore be considered to have raised prices about $1.00 per hundred pounds higher than they would have been if the government had not slaughtered light weight pigs last summer.[14]

Effect of Possible 20 Per Cent Reduction in Hog Production

Let us now consider the prospects for the coming winter and thereafter, when hog supplies will have been reduced perhaps 15 or 20 per cent by the administration corn-hog program. If hog production were to be reduced 20 per cent, hog producers as a group would receive $80 \times 140 = 11{,}200$, or 12 per cent more for that smaller crop than for an average crop.

Where would this extra 12 per cent of money come from? It must come either from the packers or from the consumers. At first glance it would seem that it could not come from the packers. Figure 1 shows that their net margin remained roughly constant throughout the period from September 1933 to May 1934; if the

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[13] Agricultural Adjustment. A report of Administration of the Agricultural Adjustment Act, May 1933 to February 1934. U.S.D.A. 1934, p. 253.

FitzGerald, "Corn and Hogs under the A.A.A.," p. 102, estimates that "the emergency (hog buying) campaign should reduce 1933-34 federally inspected slaughter by 9 per cent."

[14] The effect of the government's subsequent purchases of pork for relief purposes is difficult to determine. It undoubtedly increased the price of hogs to some extent, because the pork went to unemployed and other people who would have eaten less pork if they had had to buy it themselves. How much less, however, is not known. In any case, the relief buying is not an integral part of the AAA program. For these reasons, its effect is not discussed here.

packers were able to preserve their margin then, they will probably continue to preserve it in the future.

One would suppose, then, that the extra farm income came from the consumers. Yet Figure 2 shows that the consumer's retail pork products demand curve is more elastic than the curve for live hogs shown in Figure 3; so that when pork supplies are reduced 20 per cent, consumers will pay only 20 per cent more (not 40 per cent like the buyers of live hogs do, as shown in Figure 3). That is, consumers pay more per pound, but only enough to offset the smaller number of pounds they buy. They do not pay any more total money for a small amount of pork products than they do for a large amount. The slope of their demand curve is unity.[15]

The extra money received by farmers for a small crop of hogs, therefore, cannot come from consumers. One might think then that consumers will not feel any ill effects of the corn-hog program. But this is not correct. Consumers will not be paying out more money for pork, it is true; but they will be getting 20 per cent less for their money than before. Presumably they will have to spend more money for all food than before, because they will have to buy a larger quantity of other foods to make up for the 20 per cent less pork they will buy if hog production is reduced 20 per cent.

This might seem to indicate that the extra 12 per cent income received by hog farmers will come out of the packers, after all; not because they pay it out of their margins, but because their volume will have been reduced say 20 per cent, so that their previous margin per 100 pounds, multiplied by their reduced volume, will bring them in only 80 per cent of their previous total income.

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[15] The elasticity of the price-quality curve for hogs is —.5, while the elasticity of the curve for pork at retail is —1.0. These two curves appear inconsistent with one another. If the margin between the price that the farmer receives for hogs and the price that the consumer pays for pork remains roughly constant, it would seem on the face of it that both curves should have the same elasticity.

Actually, however, the two curves are consistent. For elasticity is a proportional concept, and the retail price curve runs higher in absolute cents per pound than the hog price curve. If both were plotted in original absolute terms of price per pound, on the same chart, the retail pork price curve would occupy a position above the hog price curve. The two curves would have the same arithmetic slope, but they would not have the same proportional elasticity. If the average "height" of the retail pork price curve, measured in cents per pound, were twice as great as the average "height" of the hog price curve similarly measured, and the two curves were parallel, and the upper curve were directly above the lower; then the elasticity of the upper curve, measured, as it should be, in proportional terms, would be twice as great as the elasticity of the lower curve.

This can be visualized by remembering that in a chart that represents elasticity correctly, a 10 per cent change in price is represented on the vertical scale by the same distance as that by which a 10 per cent change in quantity is represented on the horizontal scale. In the case under consideration here, the scales might be drawn so that the lower part of the chart would show the elasticity of the hog price curve correctly; but then the chart would not show the elasticity of the retail pork price curve correctly. For that purpose the vertical scale would have to be "squashed down" 50 per cent. And this would reduce the slope of the retail pork curve 50 per cent; the curve would no longer be parallel to the hog price. Its elasticity would then be clearly revealed as double the elasticity of the hog price curve.

Packers May Increase Their Margins

This at once raises a question. Will the packers be content simply to retain their previous margin per hundred pounds when supplies of hogs are reduced and their total volume of business is cut 20 per cent? Will they not naturally seek to increase their margin per hundred pounds, enough to offset the reduced volume? They would not need to increase their margin a full 20 per cent, because they handle other products besides pork and not all of their costs are fixed. But a large proportion of their costs are fixed; pending investigation of this question, we might assume as a working hypothesis that the increase in margin that they would seek would be perhaps 10 per cent, in addition to the increase occasioned by their adding on the processing tax.[16]

What about the margins taken by other middlemen—by retailers? These margins bulk considerably larger than the packer's margin. In all probability, these margins will remain unchanged. These middlemen handle many other products besides pork, and a reduction in pork volume would be only a small item in their total income. Transportation charges probably will remain unchanged.

For purposes of clarity, let us trace out what would happen if packers widened their margin a full 20 per cent. We would then be faced with this situation. Consumers would be paying no more for the reduced "crop" of pork than they were previously paying for an average crop. Packers would be taking roughly as much money out of the consumer's dollar (i.e., a 20 per cent wider margin out of a 20 per cent smaller crop of hogs) as before. The only source from which the extra 12 per cent income received by hog farmers could come would be the hog farmers themselves. In other words, if all farmers signed up under the program, then, after they had reduced their hog production, sold their reduced production of hogs, and cashed their benefit payment checks, their gross hog income would be the same as if the plan had never been thought out and put into effect.

It is extremely unlikely, however, that packers will widen their margin a full 20 per cent. Two features of the actual situation should be noted. First, packers handle other products as well as pork, and their costs are not all fixed; packers, therefore, will probably widen their margin only perhaps 10 per cent, possibly even less. The tax would fall, then, not fully on the hog producer,

[16] There is some evidence, although it is not conclusive, that packers in the past have widened their margin during years of small hog market receipts, and narrowed it during years of heavy hog receipts. But there may have been other reasons for the changes in their margins.

but partly on the receiver of packers' variable costs; that is, on packers' employees.[17] And second, hog producers' costs are not all fixed either. It will cost less to raise 80 per cent of a hog crop than to raise 100 per cent. Producers will be getting a larger total hog income than before, and their expenses will be somewhat less; and their farms should benefit from being less intensively cropped for grain than before.

Differential Effect of Program

The final question concerns the differential effect of the program upon contract signers and non-signers. Those who sign the contract and reduce production 25 per cent will receive a benefit payment of $5 per head on the remaining 75 per cent of their hogs. This is equivalent to receiving $15 per head for the hogs they do not raise. And $15 per head is equivalent, at average weights (230 pounds per hog) to about $6.50 per hundred pounds.

Those who do not sign up will receive the same open market price for hogs as those who do sign up; but they will receive no benefit payments. The use of specific figures will make this part of the question concrete. Suppose that the farm price for hogs, had there been no AAA program, would have been $4.00 per hundred. A 20 per cent reduction in total hog production would then raise this price 40 per cent, or $1.60, to $5.60. If this reduction had been accompanied by the imposition of a processing tax of $2.00 per hundred (which is perhaps about what the actual tax will average) the farm price would be reduced from $5.60 to $3.60.

The non-signer, therefore, will receive $3.60 per hundred pounds, whereas if there had been no program at all he would have received $4.00. He will be thus somewhat worse off than before, in absolute terms. And in relative terms, he will be considerably worse off than his neighbors who have signed contracts. For his neighbors will be receiving the same market price for their hogs as he, but will be producing only 75 per cent as many hogs, and will be receiving $6.50 per hundred pounds, clear, *for the hogs they do not raise.* This is considerably more than the non-signer receives, gross, for the hogs he raises. And it is certainly much more than he can ever hope to *clear* from the last 25 per cent of his hogs.

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[17] Unless beef and mutton production expanded sufficiently to offset the reduction in hogs; but this is unlikely.

In addition it should be noted that "packers" are not a homogeneous group. Some would feel the pinch more than others, and might be forced out. There might be shifts in the localization of the packing industry. Further research is needed here also.

Summary

It appears, then, that the burden of the processing tax on hogs is not being borne by the packer, nor passed on to the consumer, but is being passed back to the producer in the form of lower market prices for hogs. The market price of hogs during the first part of 1934 would have been depressed by approximately $2.25, the full amount of the tax, had not the 1933 federal government slaughter of light weight hogs reduced supplies somewhat. This reduction in supplies offset part, perhaps $1.00, of the full depressing effect of the tax. The net reduction in hog prices, then, was probably about $1.25.

If hog production is reduced 20 per cent by the AAA program, consumers will then pay about 20 per cent more per unit of retail pork products. Since their demand curve for pork has an elasticity of unity, their total outlay for pork products will remain roughly constant. Their outlay for all food will be increased, however, since they will need to buy more of other foods to make up for the 20 per cent less pork they buy. Producers of other foods will therefore benefit to some extent.[18]

Farmers should receive larger total returns from their smaller production, since the hog price-quantity curve has a slope of about —.5. This extra income cannot come from pork consumers, as has just been shown. It must come from the packers, because of their reduced volume of slaughter and consequently smaller total income from slaughtering hogs. Packers may increase their margins to offset their reduced volume, but since their total costs will be reduced on account of their smaller volume, the percentage increase in their margin should be substantially less than the percentage reduction in their volume. To that extent, the gross hog income to hog farmers as a group, reduced by the tax but increased by the benefit payments, should be greater than before. The increase in the profits of hog farmers as a group (or the decrease in their losses) will be still greater than the increase in their income, since their total costs will have been lowered because they will be producing fewer hogs; their gross income will be greater, and their total costs will be less, and their net profits should be greater than before.

Within the farming group, those who have not signed contracts to reduce hog production will receive the same open market prices for hogs as those who have signed up, but will receive no benefit

[18] The assumption here is that the demand for all food is less elastic than —1.0, the elasticity of consumer's demand for pork. This assumption is almost certainly valid, but it is difficult to prove it statistically; the total production of food varies so little that it is difficult to establish a "statistical total food demand curve."

payments. Whether their gross income will be greater or less than if they signed up will depend upon the extent to which they expand their hog production without incurring sharply increased unit costs, and upon the extent to which hog prices approach $15 per head (roughly $6.00 per hundred pounds) at the farm.

It seems, then, that (a) as far as the incidence of the processing tax is concerned, farmers "pay the processing tax" themselves, in the sense that the price they receive for hogs is $2.25 per hundred lower than if no tax were being applied; but they are being reimbursed by benefit payments from the federal government arising from the collection of the tax; (b) consumers will not pay the processing tax, but will bear a large part of the incidence of the effect of the reduction in hog production; they will receive, say, 20 per cent less pork while paying out as much money as they used to pay for a full amount of pork; and (c) packers will take a smaller total volume of margin from the "consumer's pork dollar" than before, even though their margin per pound may be increased, because of the reduced volume of pork they will handle. As a result, therefore, it appears that farmers will receive more gross money income, for raising less hogs, than before the program was put into effect; and their profits should be substantially increased.

LAND CLASSIFICATION AS A BASIS FOR LAND USE PLANNING[1]

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Economic planning has become an accepted fact, and the National Planning Board, together with Regional and State Planning Boards, are now considering the techniques for carrying the effects of planning in its broader sense into a much more intimate contact with the life of the average American citizen. To be sure, there has been much of a type of economic planning involved in the A.A.A., N.R.A., P.W.A., C.C.C., C.W.A. and so on, but all of these have either smacked of an emergency or have lacked the coordinating principle of genuine national planning. Presumably, the results of the efforts of the National Planning Board will be somewhat different and their program will accord more nearly with the preconceptions of national planning as it has been discussed during the last decade, than will the efforts of these individual establishments.

The effectiveness of planning will be very largely conditioned by our knowledge of what we have to work with, and in the sphere of land use planning our knowledge of the quantity and quality of our resources is not too adequate. Land classification data, in other words, are likely to be found lacking in two respects. First, by no means are all lands classified and, second, such classifications as have been made may not be and usually are not sufficiently easy of interpretation so that such planning boards can use them readily. The present paper is devoted to the second of these problems, i.e., to the matter of making readily understandable land classification material.

Often the suggestion has been made that all we need is a good single index of the productivity of land, and the problem of whether such a single index can be constructed needs first to be settled. Let us take, for instance, the question of whether or not soils may be classified upon the basis of a single index of their productivity.

In answering this question we must first examine the concept of productivity. Productivity is always implicit rather than actual, and when encountered as a result is known as production rather than productivity. Furthermore, production is the result not of a single agent but rather of a system of cooperating agents

[1] Contribution from the Departments of Agricultural Economics and Soils, Missouri Experiment Station, Journal Series No. 383.

including land, labor, capital and entrepreneur. These agents, of course, may be subdivided much more minutely. The fact remains, however, that one may not be able to arrive at an adequate classification of one of the agents upon the basis of the results obtained with a combination of agents.

Such would not be the case if the agents were combined in uniform combinations or if these combinations were so constant that exceptions were unimportant. Unfortunately, however, the remarkable characteristic of such combinations is their unusual diversity. They vary not only in relation to the quantity of the elements applied to a given acreage of land but equally in relation to the quality or kind of agents applied. The great grist of farm management and production economic research data is testimony to the remarkable variation to be discovered in relation to these combinations.

The suggestion that classification be based upon the results of certain optimum combinations leads nowhere. These optima in terms of physical combinations would be highest average output per unit of input or highest total output per unit of the land factor. Only under unusual circumstances and at the margin of land use, however, is land used only to the point of highest average output per unit of input and almost never is it used to the point of highest total output. Classification upon the basis of these optima would, therefore, accord only very poorly with the results under actual use. For the planner such a classification would be difficult of interpretation.

The diversity of combination is, however, by no means the only difficulty. Equally important is the great diversity of products and in certain cases, services that these agents in combination are employed to produce. Thus, land might be classified upon the basis of its effectiveness in the production of corn, but the results would be quite unsatisfactory for such areas as northern Minnesota, North Dakota, Montana or the Canadian Provinces, where little or no corn is produced, and about equally valueless for the cotton and fruit producing centers; in fact, valueless except where corn is an important crop. One would find the effectiveness of a classification based upon factors affecting the production of alfalfa or blue grass equally unsatisfactory where it was corn, cotton, or wheat that were the dominant crops.

To get away from the effects of diversity or kind of products produced, it has been suggested that some generic measure such as energy be used as the basis for classification. Thus, one might measure the caloric value of wheat, cotton or corn, or even blue

grass and other pasture crops, and classify land upon the basis of these results. The inadvisability of this method for planning purposes needs only one illustration. Cotton and corn are often rivals for land, as they are in Southeast Missouri. On the basis of caloric value, corn would undoubtedly tremendously outproduce cotton. Yet, cotton more often gets the choice than does corn. Obviously, factors other than the mere caloric output determine the effectiveness of the production of a particular crop as a form of land use. Yet, for the planner, a system of land classification is effective only as it enables him to designate, understand and suggest the most advisable forms of land use.

One might shift to the optimum economic combination or operation at highest profit combination. But here again certain difficulties are apparent. The first of these relates to the fact that highest profit combination depends so acutely upon the prices of the products produced. These change, not only in relation to one another, but in relation to certain fixed charges as the value of money rises or falls. Each shift of prices brings about a change in the optimum economic combination and no land classification, worthy of its name, could be based upon so unstable a foundation. The suggestion that there be used an average highest profit combination based upon the average for a number of years adds little. In fact, one has what closely approximates such a classification in the case of a map of land values and, as is commonly known, cross-hatched maps of land values change under the stress and strain of economic forces much as a chameleon changes or attempts to change in crawling over a Scotch plaid.

Perhaps also, it is worth mentioning that technical improvements shift the highest profit combination by their effects on production and costs. In this day of rapid improvement in productive technique, this factor alone would be sufficient to rule out any classification based upon an economic optima. For instance, the movement of the Corn Belt northward, the introduction of alfalfa, soybeans and later lespedeza, and other countless illustrations might be adduced to show how fleeting are the systems of land use.

Abandoning for the moment the idea of classification upon the basis of some criterion of economic productivity, one might switch to some physical and static feature upon which to classify land. Such a feature might be soils and useful land classifications upon the basis of this land feature have, indeed, already been made. Soils have in the past been mapped largely upon the basis of three criteria, namely, texture, parent material and soil hori-

zon. That some of the distinctions have been worth while is questionable, but it does appear that this mapping upon the basis of a definable, static, physical characteristic is, indeed, the proper beginning as far as land classification is concerned. Soils are not unchanging, indeed they are constantly being modified to a small and sometimes to a large extent by such forces as erosion, leaching, losses of fertility through cropping and so on. Relative to the economic factors, however, soil is very stable. Furthermore, soils are highly correlated with topography; a matter of great concern since topography is in some respects coordinate with soils as a determinant in the sphere of land classification.

An objection to the soil map as a basis for land classification is the difficulty that anyone, save an expert or specialist, experiences in attempting to interpret its meaning. To the planner who wishes not only to interpret the soil map and other land classification data for his own use but often wishes to present the plans derived from such classification in a suitable manner to the public, this is indeed a serious defect. Furthermore, the ordinary soil map is, in itself, an inadequate criterion of productivity. And it is upon the variations in productivity that many if not most of the decisions of a planner must be based.

In his use of the soil map, therefore, the planner is likely to feel that he is afforded only one rigid criterion of productivity, when what he needs is a knowledge of the many salient aspects of land so that he may combine them in many ways in discovering to what uses land can and should be put. For him, therefore, the problem with respect to the soil maps is to make it more understandable and more flexible. Can this be done?

If the soil map is broken down into the many elements of which it is composed, it may be made into just such a flexible instrument for the determination of policy on the part of the land planner as he desires. The first step, therefore, in improving the soil map as the basis for land classification and land use planning is to analyze the many factors which are determinants in land classification. Not all physical features of land are worthy of noting and mapping nor is a knowledge of all the minute variations in land quality needed by the land planner in order to make his decisions with respect to land use planning, though perhaps few of these differentia should be lost sight of by one who actually manages a particular tract of land. Indeed, taking so large an area as a state, so numerous are the factors affecting land quality that to attempt to use them all would be to court confusion and to lose perspective. Therefore, one needs in the first instance to limit these differentia sharply to the salient features only.

The following tentative list of differentia is suggested as including for the state of Missouri, at least, those land features and attributes that the planner will need to know in order that he may satisfactorily deal with the land from the viewpoint of its agricultural and forest uses.

I. Soil
   1. Texture and stone content map.
   2. Exchangeable bases map.
   3. Acidity map.
   4. Subsoil map.
   5. Root penetration map.
   6. Nitrogen content map.
   7. Phosphorous content map.

II. Topography
   1. Degree of slope map.
   2. Physiographic map.

III. Natural vegetation
   1. Map of prairie and timbered areas.
   2. Map of forest types.

IV. Climate
   1. Precipitation.
   2. Growing season.
   3. Frost dates.

Other features affecting productivity will occur to many. In some states, maps of areas of soils too alkaline for certain crops will be necessary. In certain other states occur great areas of land that have insufficient surface drainage or upon which intermittent flood waters descend, both of which facts may destroy a part at least of the land's productivity. Similarly, other aspects of climate might in many states be of great significance. Thus, hail and storm areas are of importance in some states and occasionally humidity, insolation and fog belts need to be mapped.

The man interested in coordinating agricultural development with other types of development might wish to know and have mapped for him power sites, recreational sites, industrial sites, mining areas and transportation routes and facilities. All these are features of land classification. In a complete land classification they would need to be included. Indeed, what is proposed here is a language of land classification using these maps as words, sentences and paragraphs of the land classification language.

The figures below are presented for purposes of illustrating this concept. These are designed to bring out the meaning of this *differential system of land classification* as applied to the solution of problems of surface uses of land in the state of Missouri. The first is a map of the nitrogen content of the surface soils of

the state. The usefulness of this map to those who are acquainted with how critically limiting a feature nitrogen can be in the production of many crops will be immediately apparent.[2] Indeed so closely are nitrogen and corn yields associated in certain regions that the average nitrogen content of soils and the average corn yields by counties for states south of Iowa show almost perfect correlation.[3]

For other crops, however, notably legumes, the nitrogen content of the soil is not so vitally important. For these and other plants other limiting factors such as a lack of calcium, potassium or phosphorus may be of greater significance than nitrogen.

The second figure portrays the clay content of the subsoils of various soil areas of Missouri. Perhaps too little attention has been given in the past to the effects of clay pans upon productivity. In Missouri some very considerable areas of upland soils, running diagonally across the state from northeast to southwest, have shallow topsoils and heavy, impenetrable and somewhat inert subsoils. Under such circumstances the topsoil wears out relatively quickly and the impervious subsoil slows up the absorption of moisture and makes the land soggy and cold in the spring and later, because it is an obstruction to the movement of moisture, makes the soil seriously subject to drought. It contrives, in other words, to restrict the plant, both as far as moisture and plant food are concerned, to the first 18 or 24 inches of surface soil. Attempts to associate these clay pans as well as texture and topography with production in the form, let us say, of crop yields have yet to be made. That these features do effect the productivity of land is sufficiently well known to need no exact statistical determination in order, initially, to establish their importance in a system of land classification.

The third map relates to the texture of the surface soils of Missouri. Most Missouri soils are classified as silt loams, and texture is a limiting factor only in the case where stones and gravel are abundant in the surface or the subsurface. Both stony and gravelly soils are concentrated pretty largely in the Ozark Highland. They affect land use largely because they obstruct cultivation. Obstruction is, of course, most serious in the case of stones, but a factor also upon the gravelly soils. Too high concentration of gravel, particularly in the subsoil, acts also to impede the upward movement of water. In Missouri, however, this factor is not so

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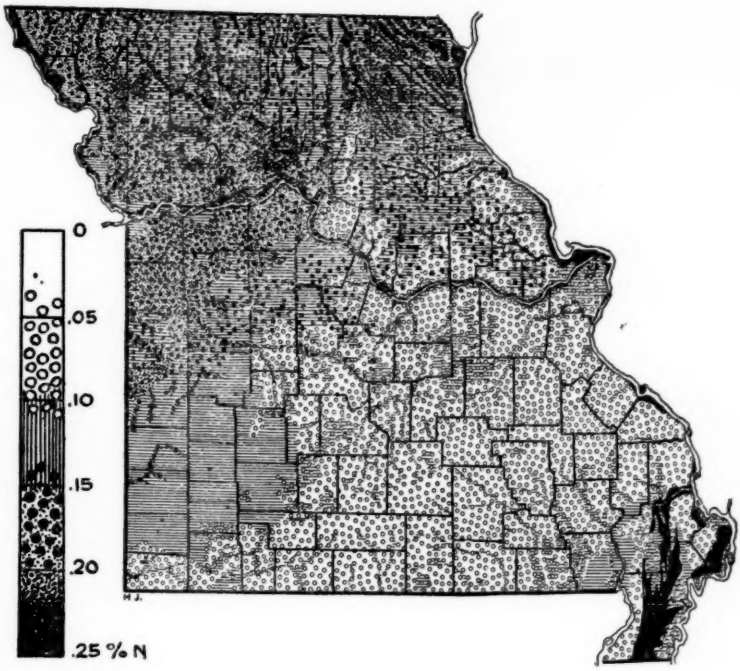
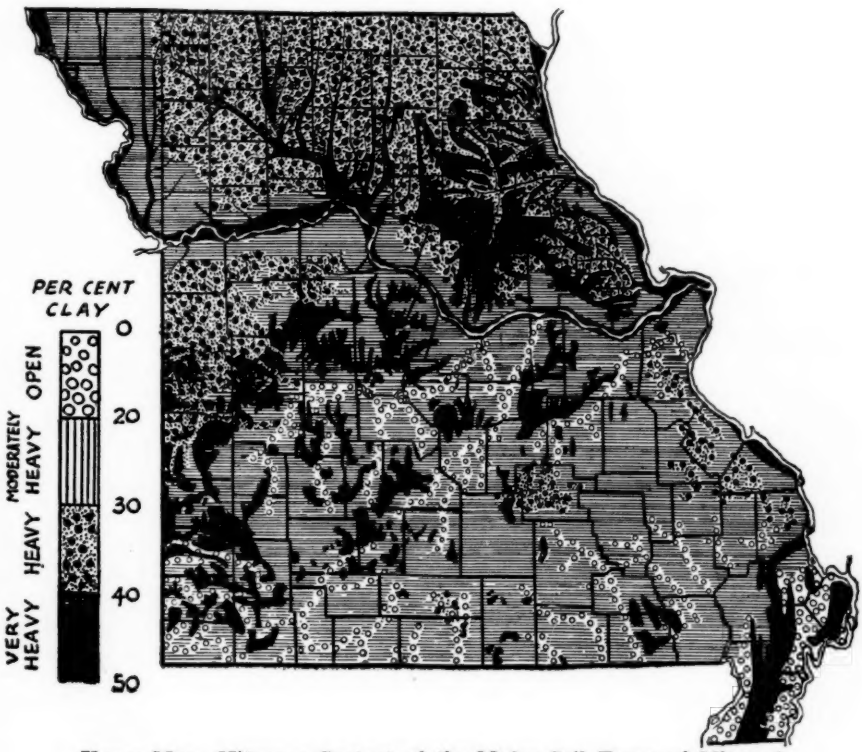
[2] See Hans Jenny, "A Study on the Influence of Climate Upon the Nitrogen and Organic Matter Content of the Soil," Mo. Agric. Expt. Station Research Bulletin 152.

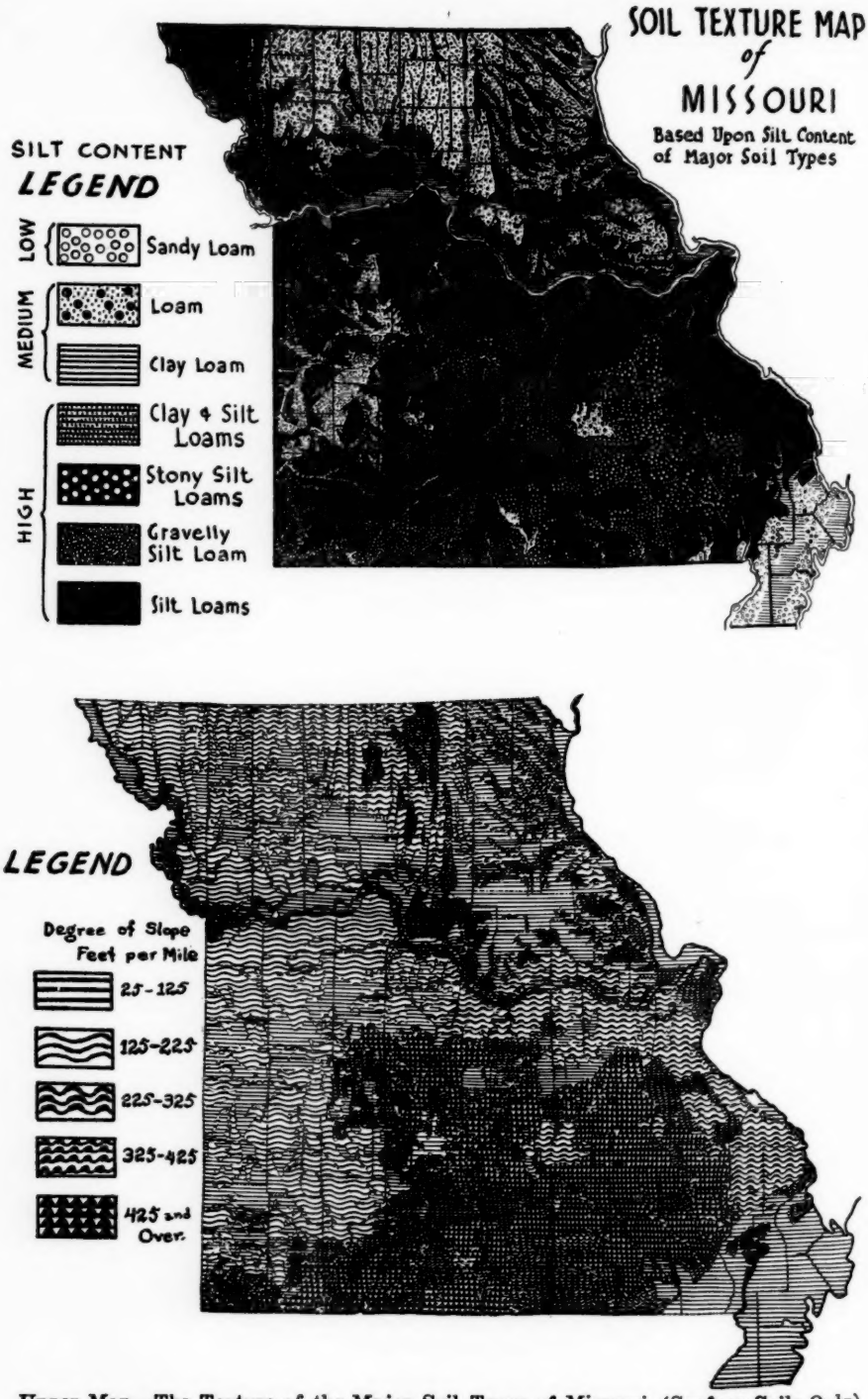
[3] *Ibid.*, page 62.





Upper Map—Nitrogen Content of the Major Soil Types of Missouri
(Surface Soils Only)

Lower Map—Clay Content of the Subsoils of the Major Soil Types of Missouri



Upper Map—The Texture of the Major Soil Types of Missouri (Surface Soils Only)

Lower Map—The Average Slope of the Major Soil Types of Missouri

serious since the gravel fragments are largely chert and are intermingled with the finer separates in both surface and subsurface.

The final map shows the average degree of slope and is intended to afford the planner an index of the effect of topography on land use. The map was constructed by determining, from the combination of topographic quadrangles and soil survey maps, the average degree of slope for the major soil types of the state. Slope was measured by noting the number of contour lines that were crossed in the space of a mile in the case of a soil type. The presumption was then made that a particular soil tends to occupy a rather constant terrain; a presumption reasonably in accord with fact.

Land use is affected by the extremes of slope. That is land may be so level, as is true in certain sections of Northeast Missouri and particularly in the Southeast Lowlands, that it does not have sufficient surface drainage, and under such circumstances water and mud mitigate the effectiveness of its use. At the other extreme the slope may be so great that surface drainage is excessive and cultivation difficult. Such is notably the case over large sections of the Ozark Highlands.

For reasons of space, further illustrative maps are not included, though some of them are quite as important as those portrayed in the above figures. Thus, while rainfall over the state is ample and well distributed through the growing season and, hence, is not to be counted as a limiting factor, except in a restricted sense, as far as land use is concerned, the variations in temperature and length of growing season do, in one important instance, have a very notable effect upon land use. That is, only in seven counties of the Southeast Lowlands of Missouri is the production of cotton an important farm enterprise. In no other section of the state is the average growing season sufficiently long to induce the growing of this fiber crop.

The real test of planning is the effectiveness with which diverse types of information can be correlated in the promulgation of a program of action. How may the information brought together under this differential system of land classification be coordinated? A few illustrations must suffice.

How can one, for instance, discover by the use of these maps where the corn crop is best adapted in Missouri? Rainfall and rainfall distribution is not in this state a seriously limiting factor in the case of corn. A shallow topsoil and an impervious subsoil, however, and particularly a lack of nitrogen are very im-

portant factors as is also the stone and gravel content of soil and extremities of slope; that is a terrain either too level or too steep. Clearly, therefore, corn will be and is restricted in Missouri to areas relatively high in nitrogen and with sufficiently good external and internal soil drainage. The map of the distribution of corn acreages in Missouri reveals, as it should reveal, that the percentage of crop land devoted to corn is greatest upon the Marshall soils of the upland and the Wabash soils of the river bottoms in Northwest Missouri. In these same areas the nitrogen content of the soil is high, the subsoil is free from obstruction to root penetration and the degree of slope affords ample surface drainage, but is not so steep as to result in excessive erosion in cultivated fields. On the other hand, corn is not so well adapted to soils having shallow surface soils and impenetrable clay pan subsoils. Indeed, upon such soils Missouri farmers have often felt constrained to restrict even further than is the case at present the acreage devoted to corn, feeling that the advantage lies with crops which mature early in the summer season and, hence, escape the effects of the dry spells that are characteristic of the Missouri summer.

In the case of horticultural and fruit crops these maps are also indicative. The fruit trees, particularly, need a soil in which the roots may penetrate deeply and where internal drainage is adequate. Clearly, such conditions are not found upon the clay pan soils. However, in the case of fruit trees the matter of comparative advantage and disadvantage is also involved. Fruit trees are not so critically affected by a lack of nitrogen as is corn. Corn land is relatively scarce. Fruit trees are, therefore, relegated to the areas of rougher topography and lesser nitrogen, but with a soil the structure of which is relatively good. Not all such soils will be used for fruits, but it is upon just such soils that a very large part of the fruit crop of Missouri is produced.

Equally easy is it to select the forest soils of the state with the use of these maps. Forest trees do not need soils of high nitrogen content or more level topography and they are not much affected by the stone content of the soil. They can, therefore, use lands not suited to crops and, inasmuch as good crop land in the United States is scarce relative to the amount of forest land available, trees are likely to be and are restricted to those land areas unadapted because of some factor or other to crop production. In Missouri forest lands are clearly distinguished as occurring in the Ozarks in the areas of stony soils and steep slopes, large acreages of which occur in that region. On the other hand, certain

of the poorer crop soils in the state are not suited for timber production. These soils are those with the impenetrable clay pans, some of which occur in direct and intimate association with the hilly and stony lands just referred to above. In order to obtain a marketable size in a reasonable length of time, most trees need soils in which their roots can penetrate to some considerable depth. These clay pan soils restrict trees as well as crops to the upper 18 to 24 inches of soil and can be counted excellent for neither. Perhaps the greatest comparative advantage of such soils will lie in the production of grass and other pasture plants.

The data of the differential system of land classification could be used equally well in discovering where other crops can or cannot be grown. These maps do not give definite information on how much or upon how large an acreage the crop should be grown. Nor are they likely to give more than a reasonably good clue regarding the combinations of crops and livestock, or more briefly the combination of farm enterprises, that should make up the farming system of a given area. These can be discovered only by intensive analysis such as that arising from the studies of the type of farming areas of the United States. Furthermore, there is nothing in these land classification data to afford information upon certain institutional and economic factors operating to affect land use. That is, systems of land tenure, land taxation, types and cost of local rural government, and so forth, will still need to be studied as intensively as ever.

The great advantage of the differential system is that it does denote areas most likely to be pathological from the viewpoint of physical production and it does permit divisions, such as that given in the table below, segregating definitely submarginal crop land and that definitely super-marginal. Thus, in Missouri there are 7,371,000 acres, or 17 per cent of the total land area of the state, of lands definitely submarginal for crops because they are too stony and too steep for cultivation. These are the so-called "absolute" forest lands of the state. In addition there are 12,463,000 acres of what might be called marginal crop land. These soils occupy 28 per cent of the area of the state and are subject to one or more serious soil faults. All of them are low in nitrogen. All are highly acid; a number of them occupy hilly terrains; others are too flat. A number of them have clay pan subsoils and the Clarksville gravelly loam has great amounts of cherty gravel in the surface and subsoil.

A third class of soils of moderate fertility may also be designated. These occupy 15,699,000 acres or 36 per cent of the land

area of the state. They have moderate fertility, are worthy of being retained for agriculture and for the purpose of crop production, but each is subject to some unfortunate characteristic. These faults are much like those denoted above but are of lesser degree, or if equal in degree are compensated for by some excellent characteristic which counterbalance the fault. Thus, the Osage silt loam is an alluvial soil often heavy and poorly drained but it is high in nitrogen and otherwise fertile. Similarly, the Knox silt loam occupies a steeply rolling to hilly terrain but is reasonably fertile, has an acceptable amount of nitrogen and a good structure.

Finally, there is the fourth class of genuinely excellent soils occupying 8,501,000 acres of land or 19 per cent of the area of the state. These soils, too, may have certain faults. They are not perfect but their shortcomings are submerged by their remarkable excellence in other respects.

The future program of land use for each of these four categories of soils in Missouri will obviously be quite different. For Class I above the considerations will be reforestation, flood control, recreational use and the curbing of land tax delinquency. Upon Class II there exists a population whose economic status is seriously jeopardized. These people may, as has actually been proposed, need to be moved to other areas or to have their land tenure system significantly modified, or to have part-time industrial or forestry employment provided for them. For the third class, too, some part time employment will apparently be needed unless a considerable revision in land tenure and land use systems is evolved. It is upon these soils also that the debt question is probably most serious. For the fourth class the program of the A.A.A. if it is accompanied by a satisfactory industrial revival will be sufficient to inaugurate again an era of decent prosperity and acceptable farm incomes. In other words, for this group an emergency program is sufficient. For the others the emergency program may well prove inadequate.

Many will discern immediately that the differential system of land classification, as outlined above, is not sufficiently intensive for use in solving or analyzing a great number of land use problems, particularly those of a local nature. There are, however, various levels of decisions more clearly recognizable for the planner than for him who operates only a single farm. These levels of decisions are much like those that are characteristic of our largest industrial corporations where a great amount of authority is delegated. For this reason it is well not to attempt to make

the land classification language for the state too minutely comprehensive. One had, indeed, best not attempt to calculate all the grades in one's first reconnaissance to locate the route of a railroad.

For studies of a much more local nature far more detail may easily be comprehended and can equally easily be provided under the differential system of land classification. Not all the differentia called for in one area will be needed in another. To adapt this method to a lower level of decision-making there has been devised the so-called type-county survey, which contemplates securing for certain typical counties in the various type of farming areas in Missouri data similar to that suggested above for the state, but more comprehensive and adapted in each instance to the particular conditions within the county as these have been suggested from the data of the larger state study. These land classification data, it is contemplated, will be supplemented by a broad range of economic, sociological and engineering data.

THE ADMINISTRATIVE USE OF AGRICULTURAL CENSUS AND INTERCENSAL DATA[1]

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Last spring, in those breath-taking days while the Department of Agriculture was getting ready for the jump the moment that the agricultural adjustment act was signed, the agencies in the Department that had had most to do with the assembling and using of actual data came to the conclusion that a quick simultaneous census of all acreage and production during the past and two preceding years would provide data that would be sorely needed in the months ahead. They went so far as to draw up plans and schedules for it, and were all ready to spring it when a decision was handed down by one of the "practical," "hard-headed" administrators that the act did not need all these data to be administered. It is the opinion of those who have had to deal with the problem of county and individual farm quotas that a census taken at that time would surely have cost less than has been expended in checking up such data as were available, and that, moreover, the time for getting them is past, since attempts now would get data considerably affected by the allotment programs in operation.

We can expect the foregoing experience to be repeated often in the next twenty years if we really go forward with a positive planning and adjustment program; and we can expect again and again to have administrators, budget directors, and even congressmen, deny the need for such data.

The purpose of this paper is to point out the data needs of the present and prospective programs for agriculture and land use, on the score of both content and accuracy, to compare these needs with the existing provision of data, and perhaps give a few indications as to what lies ahead of us in census-taking if the aforesaid programs are to be executed successfully.

It will be well at the outset to review briefly the setup under which the present data are obtained, even though many readers of this paper are entirely familiar with it. The essential features

[1] This paper was read at a joint meeting of the American Farm Economic Association and the American Statistical Association of Philadelphia, December 28, 1933.

[2] Professor Black is indebted to the Harvard University Committee on Research in the Social Sciences for financial assistance in carrying on the research upon which this article is based.

of this setup are that the federal census undertakes at ten-year intervals (probably five-year intervals from 1925 on) a complete enumeration of the acreage and production of all farm crops, of numbers of head of all classes of livestock, and volume of production of each form of livestock product, and that the Division of Crop and Livestock Estimates uses the results of these enumerations as basing-point data and applies to them the percentages of annual change in acreage and production that are obtained from the statements of its network of "crop reporters" carefully spread over the country. If either the census data or the percentages of annual change are wrong, the annual estimates are wrong. If the crop reporter's judgments are wrong any year, this error tends to be carried forward into later estimates. Error is likely to creep into the reports somewhere long before the end of a ten-year period. In fact, the Crop and Livestock Estimate service has come to recognize in such reports certain characteristic forms of bias which it designates as "memory bias," "selectivity bias" and the like, which it has learned how to measure and compensate for in part. Hence the census data are greatly needed as periodic checks. In times past—not so much in late years—such enumerations have sometimes revealed important accumulated deficiencies in the crop estimate percentages of change. For example, the federal census of 1910 showed much more of a decline in the spring wheat acreage of Minnesota than the crop reporters had indicated.

The Crop and Livestock Estimate service, however, did not generally accept the 1925 federal census figure as a new basing point. This introduces a new factor in the problem, namely, the increasing availability of data of car-lot shipments, cotton ginnings, and the like, that can be used as checks on the annual crop and livestock estimates. Such checks indicated for several prod ucts or important areas that the 1925 federal census data were not generally as complete as those of the decennial censuses had been. The Bureau of the Census utilized such supplementary data in checking and adjusting the enumerators' returns; but such data were not readily available for all crops and livestock.

When the A.A.A. began its task of determining county quotas, it had the following data with which to work:

(1) The 1929 federal census data on acreages and production.

(2) The crop estimates of acreage, condition and production by states for 1930, 1931, 1932 and earlier years, and acreages for 1933 for some crops.

(3) County estimates of acreage and production for recent

years, prepared by the state statisticians or in the Washington office, by applying annual percentages of change as reported by the crop reporters to the 1929 county crop figures, with adjustments on the basis of annual data on car-lot shipments, ginnings and the like where these data were available and the state statistician had had time to use them. The Crop and Livestock Estimate service has never considered these annual county estimates as anything more than approximations, mostly because too few reports are obtained from some counties, but to some extent because the census data have varying degrees of incompleteness by counties. Averages of county averages, by states or crop reporting districts, are needed to compensate these deficiencies.

(4) State censuses or assessors' reports by counties in some states.

(5) Unpublished data from railroads, processing plants, and the like.

In the case of wheat, the Administration decided to obtain data as to the production of non-contracting as well as the contracting growers, and to check the totals of individual production against the county quotas derived from the above data. The sign-up was so nearly complete in many western counties that the possible errors in the estimates for the non-contracting growers were of little consequence. As most of you know, the county quotas were frequently below the totals for the individual growers. Publishing the county quotas in advance probably led some associations to liberalize their estimates for individual growers, so that differences under and over did not compensate in their usual manner, with a resulting excess of individual quotas which called for much readjusting in some heavy wheat-producing areas with large sign-ups. It is believed that few cases of deliberate overstating of production occurred. The growers simply did not know their acreages and were inclined to estimate a little *more* rather than a little *less*. Account must also be taken of the fact that under our land survey system, sections of land just below the range lines run much under 640 acres.

All in all, however, after making due allowance for the foregoing, a good many of the published county quotas were somewhat in error. The errors were most conspicuous in the counties where wheat has been grown in recent years by farmers not living on the land—by the so-called "suit-case farmers." The evidence would seem to indicate that these errors were more largely due to failure of the crop reporters to keep up-to-date on the changes since 1929 than to mistakes in the census of that

year. The system of annual reporting employed is not likely to provide adequately for such changes, especially for new land brought into crops. Offsetting the low quotas in western Oklahoma were high quotas in eastern Oklahoma where shifts from wheat to cotton had not been fully indicated. Funds now available for the first time have enabled the Crop and Estimates service to obtain data of car-lot shipments by counties, and hence to check the county quotas carefully. The largest percentage errors were found in the counties where little wheat is grown, in keeping with the general experience of both census and crop reporting that the minor crops of an area are least accurately returned.

Relatively speaking, however, the errors above described were of minor consequence, and the quotas proved to be more satisfactory than either the Crop Estimates service or the A.A.A. was expecting.

Experience thus far with the cotton crop has indicated a somewhat different situation. The cotton ginning figures are considered as good checks on total production, but production control requires separate data for acreage and yield per acre. Attempts to obtain either of these from census or crop reporting have not been very satisfactory. The experience of measuring the acreages contracted to be plowed last season indicates that cotton growers do not know the size of their fields and have commonly overstated this for all purposes in the past. They would also have overstated yield except that unusually good late summer weather came to the defense of their prophecies. The new sign-up for cotton will call for data on acreages and production over several years past, and these will be checked against annual county ginnings totals adjusted for data on cross-county line ginnings now being collected by the Census Bureau. No doubt in spite of these adjustments, the totals of individual claims will not check closely with the best possible county quotas in very many counties, and the same problems will arise as with wheat. No doubt there will be somewhat of a bias upward. Those not knowing the acreage of a field will tend to call it eight acres rather than seven; those with fields already measured may think a bit too liberally of their yields. The program of the last season will check these tendencies in some ways and encourage them in others.

The corn-hog program is calling for equally specific information on acreage and production of corn and marketings of hogs. So much corn is fed on the farms where produced that records

of shipment cannot serve as checks. Moreover, the corn is commonly fed to several kinds of livestock on the same farm, so that marketings of livestock and livestock products, were they available by counties, would be inconclusive so far as any one kind of livestock is concerned. Nevertheless, out of such data as are available, workers in the A.A.A., the Census Bureau, and the Crop and Livestock Estimate service are devising county totals against which the individual production is to be checked; and we can expect that the differences arising will be resolved on some fairly reasonable basis that will serve for the time being.

Even more difficult statistical problems would be involved in the use of the census and crop estimate data on dairy production. The Census has always had difficulty in obtaining complete reports of milk production and sales of dairy products. The 1930 census is probably the best taken in this respect. The 1925 data on sales were confused in the principal dairy areas because the census questions did not provide properly for whole milk sold on a butterfat basis to condensaries, cheese factories, and creameries. A further difficulty is that no separation of dairy from beef and dual-purpose cows has ever been successful. The special question included in the 1930 census on number of beef and dual-purpose cows milked was not properly answered. Should a control program be undertaken for dairy production, it might prove necessary to take an actual census of cows on farms and check actual data of deliveries of milk and cream from local records.

If beef is put in the basic-commodity list, problems even more involved will arise. The 1930 census data on beef cattle are much confused by the change of data in taking the census from January to April, and a partly unsuccessful attempt of the Census to escape this difficulty by asking questions in terms of number of head "born since January 1, 1930," "born in 1929," "born in 1928," and "born before 1928." Some of the ratios of young to parent stock are much disturbed as a result.

The census data are of considerable use as checks on the production of the non-basic commodities, but any control plan is likely at the start to call for an actual census, the census and crop estimate data not being sufficiently accurate for actual administrative purposes. Such surveys can usually be managed because the product is grown in a limited area. Thus the Grape Control Board set up under the Federal Farm Board made a special survey.

Should a crop like flax, whose production is spread widely and thinly, be included in the basic list or covered under a marketing

agreement, the census and crop estimate data would have to be relied upon for county quotas, and the usual deficiencies of minor crop data would appear.

Any information concerning crop or product given from now on by producers will be given in full light of the fact that it is being used as a basis for individual quotas; but also in the light of the experience producers have had in the checking of their quotas for other crops. How these two influences will offset each other is uncertain. A group of several thousand identical farmers recently reported appreciably more corn harvested than they reported as planted last spring. No doubt the careful checking and even measuring of the cotton fields has produced a profound impression in the South. Similar checking next spring will have the same effect in the wheat areas.

Obviously any federal census which is taken in 1934 will produce results subject to an uncertain and probably greatly varying amount of bias in the various areas.

The foregoing makes clear that individual quotas cannot be properly handled without a complete accounting for the use of all the land in each farm. Probably a complete accounting is also needed for all the land in the county, both that in farms and that not in farms. It is necessary to know what is being done with land in non-contracting farms. County wheat growers' associations have already made such maps in many cases. Any future census should attempt to obtain a full report of land use for all the area in each county.

Complete coverage of all land use both in farms and not in farms is fundamental to all land-use planning. Land-use planning in some form or other has an assured place in future national programs. Some agency of government must supply the needed data. The Federal Census is the logical agency. Of course it will not be possible to plan land use for the whole of the country at once. Areas which are in critical condition are likely to be selected for earliest attention. However, the data for land use for the whole country will assist in selecting areas for special treatment and in laying out the general outlines of a nation-wide program.

Clearly this need for complete coverage of land use almost exactly duplicates the need for similar data as a basis for production-adjustment programs. The two needs reinforce each other.

Altogether, the foregoing suggest the desirability of having prepared for each minor civil division a map showing the location of roads and farmsteads and the condition of land use of all the land within it. Perhaps the map should go further and show

ownership and the boundaries of the tracts held by each owner. This, however, suggests setting up an elaborate system for keeping a record of the changing ownership of all the land in the United States; in other words, something of the type of the European cadastre. The experience of European governments, however, is that the cadastres require more funds to keep them up-to-date than is warranted. We should therefore keep somewhat this side of such a complete system of records and recording on maps. We may well find, however, that recent developments, such as the use of aeroplane photography, and newly developing needs for such data may combine to justify even a program of the cadastral type.

The foregoing discussion indicates that production adjustment work needs rather accurate data on production by counties and perhaps also by townships and the minor civil divisions. The federal census data thus far obtained have been of great value as checks against the totals of individual acreage and yield claims, but they have not been as accurate as is needed for administrative undertakings in planning and production control. Further evidence of this could be offered were it necessary. Wherever data on carlot shipments and market receipts are available to serve as checks, the census data are likely to be found somewhat too low for most of the counties. Where they are too high for any county, the explanation is likely to be found in movement to market across county lines. The totals commonly vary from one or two per cent too low, to eight or ten per cent too low; but in the case of some minor crops or products may run as high as a fourth too low. For major crops, the Census Bureau has used available data from shipments, ginnings, and the like to offset in varying degree the foregoing deficiencies. This has been done to a much less extent for the minor crops.

It would seem, therefore, that an effort should be made to secure a more complete enumeration of acreages, yield, and production of all crops, numbers of livestock, and volume of production of livestock products; and that plans should be made to enable the Census Bureau to accomplish such an objective. In addition, means should be established by which to obtain current data of market receipts, shipments, and the like, that will serve as checks on the census data in census years and as bases for annual estimates in intercensal years.

THE COMING AGRICULTURAL CENSUS ENUMERATIONS[1]

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A census of agriculture is already authorized for 1935, and an appropriation for it—very meagre indeed—is included in the budget estimates of the present Congress. Many believe that an agricultural census without an accompanying general population census will be without much value. The weaknesses of the 1925 agricultural census are commonly attributed to its separation from a population census. No budget item has thus far been provided for a population census. Professor Tolley's discussion of the important future administrative uses of census data indicates that only a better census than any yet taken will serve the needs of the next few years. Under these circumstances, why bother with a 1935 census at all? This is a proper question, and is being seriously asked by most users of census data when they learn of the foregoing situation.

Nevertheless, it is safe to predict that there will be a 1935 census of agriculture, with or without a population census, and whether or not the returns from it will be worth half the expenditure upon them. Accordingly, a rational course of action for users of census data is to work toward getting the best possible values out of whatever census is taken. This does not preclude, however, looking forward to the 1940 census and making plans for accomplishing then much of what will be impossible in 1935. This paper is therefore written with 1940 more in mind than 1935.

It is also written with the thought in mind that much will need to be done between 1935 and 1940 to supplement the inadequate census of 1935, if our government is to carry out the program of production and land-use planning upon which it is now embarked. Professor Tolley's paper indicates that the census must now take on a new function, that of providing what may be called "operating data." Under the program that is now developing, the nation is tending to become a large single operating unit. Such a unit must have dependable data in considerable detail as a basis for its operations: in detail territorially, by units as small as townships and even farms; and in detail in the sense of re-

[1] This paper was read at a joint meeting of the American Farm Economic Association and the American Statistical Association at Philadelphia, December 28, 1933.

[2] I am indebted to the Harvard University Committee on Research in the Social Sciences for a grant of money which assisted me in carrying on this research.

cording changes from one year to the next—an occasional cross-section will no longer serve. The federal census has been providing such data increasingly in late years. The annual cotton ginning data, for example, are this year being supplemented with data on movements of cotton to gins across county lines.

The foregoing seems to point to some necessary steps in the integration of the existing statistical activities for agriculture, such as the following:

A. A gradual merging of the census and crop estimates work, the census changing increasingly to an annual basis, and the "estimate" character giving place increasingly to actual records of operations and enumerations. This will involve extending the present use of such data as those obtained from cotton gins, local marketing agencies, railroads, produce exchanges, etc.; and actual annual enumerations of the acreages of most minor crops at least.

B. An integration of federal and state census activities. This will probably take the form of a state office in which the Census Bureau, the Division of Crop and Livestock Estimates, and the State Departments of Agriculture (and/or Markets) work in conjunction. All three of these agencies are now collecting annual data in many states. Much will be gained from combining these efforts and giving all three agencies ready access to all data. Little occasion should arise in the future for independent state censuses of agriculture or the assessor's enumerations now made in a dozen or more states. At present these state-collected data serve only as rough checks on the federal census figures and annual crop and livestock estimates. These state enumerations are not well conducted in most cases, and are worth continuing only where they can be integrated with the activities of the other two agencies. The same effort expended on collecting annual data from sources listed under *A* would contribute greatly toward useful ends.

A first step in the foregoing integration will be to have the present state statistician act as state supervisor of the 1935 census. This will merely be an extension of the procedure in 1925.

A second step might be to establish the state statistician as a continuing joint representative of the Census Bureau and Division of Crop and Livestock Estimates. If the present state statisticians are not qualified to act as state supervisors of the federal census, then they could be replaced by men who are.

C. Using more freely the services of the state agricultural college staffs. In many states at present, the state statistician

works closely with this group. This practice should be extended and reduced to a more definite basis.

All persons familiar with federal census problems recognize that the greatest weaknesses are in the actual enumeration. Following are some of the more significant of the many suggestions that have been made to the writer for improving the enumeration. Always first mentioned is the rate of compensation. Undoubtedly better pay would attract more competent workers. Better selection of enumerators is always mentioned second; and usually political influence upon appointments is blamed for this difficulty. Probably low pay and political influence are not as serious obstacles to a better enumeration as many believe. At least there is much more that can be done than at present within these limitations. Surely enough capable persons can be found within either party to take a good census. In most communities will be found several persons fully competent to make a good enumeration who do not require liberal compensation for it. The problem is how to find persons with the foregoing specifications. The most promising suggestion for this is that one-week training schools for candidates for enumerator be held in each supervisor's district, training including some actual enumeration work with careful criticism of the schedules turned in. The suggestion includes bringing more candidates to these schools than can be appointed and choosing the more competent of them. At these schools, the special problems of interpretation of instructions for each district would be discussed and most of the uncertainties cleared away in advance. A representative of the central staff of the Census Bureau would be needed at each school, but staff members of the state colleges could help with the training. Some who worked in the 1930 census have vouchsafed an opinion that the saving in editing, if the foregoing plan were followed, would more than pay for the cost of the schools.

If census-taking becomes more nearly continuous, the enumerators are likely to be used year after year to a greater extent than at present, and this will contribute greatly to the competency of the staff.

Several suggestions have been received in favor of a certain amount of decentralization of the census work, particularly in the preparation of the schedules, application of the instructions to local conditions, and preliminary editing of the returns. It is said that knowledge of local conditions is needed for a proper performance of these functions. No doubt this position is valid, but equally if not more important is a careful unification of methods and results such as can come only from a strong central

administration. All possible help should be obtained from local sources; but the central office must assume final responsibility for harmonizing the results.

In line with some of the foregoing suggestions is the proposal to make the county instead of the congressional district the supervisory unit. Were this done, the county agricultural representatives could be of assistance in several ways. This would be in keeping with the general practice of using the county as the principal statistical unit in the agricultural census.

Such an organization of the census, combined with an annual enumeration, would take us somewhat in the direction of the system followed in some European countries of breaking up the territory into very small districts such as can be covered by one person in a day or two, and having the same person report each year for the same group of families and establishments. Our present census system has developed in its present form under the conditions that have prevailed at the time. New conditions and new public policies—a larger measure of planning, for example—may call for extensive revision of our enumeration methods.

Perhaps such revision should take the form of enumeration of sample areas for part of the data, as provided in the Buchanan Bill of an earlier Congress. The Crop Estimates service has looked upon such sample surveys as providing annual data comparable to that obtained by a full enumeration. No doubt they would be valuable in this way. They can also be considered as providing data in more detail than the census for typical counties or towns, not to be extended—that is, by the Census Bureau—into estimates for larger areas. Controversy as to the relative merits of sampling vs. complete enumeration is futile in this connection. Properly coordinated, each can serve as a valuable supplement to the other.

Were a census to develop along the foregoing lines, a differentiation could be introduced that would help solve another major problem, that of shortening the schedule. The information to be collected could be differentiated as follows:

1. Collected by censuses every five years, both decennial and quinquennial.
2. Additional collected by decennial censuses only.
3. Additional collected by quinquennial censuses only.
4. Additional collected by sample surveys in census years.
5. Additional collected by sample surveys in intercensal years.
6. Collected annually from other sources—cotton gins, etc.

7. Collected annually from special enumeration—for example, acreage and production of minor crops; perhaps eventually the acreage of all crops.

Even with such differentiation, decennial and quinquennial census schedules would need to be shortened. It is true that the agricultural schedule is not as long in practice as it seems, since many of the questions are answered only in limited areas. Many of the questions recently added, however, call for attention at every farm. Experience has indicated that the data obtained from some of the questions are not worth tabulating. Little use is made of some of the data that are tabulated. There will be pressure in 1934 and again in 1939 to add questions on subjects that have recently acquired new significance. No doubt some such requests should be met. But most such questions should be dropped in the following enumeration. Many of the requests for new questions have little to justify them, being compounded mostly of a naive desire for figures. Past experience indicates that in more cases than not a new question fails to obtain the information wanted. Frequently several attempts are made before a workable form of the question is devised. New questions often affect disastrously the answers to established questions. Thus including the question on value of the farm dwelling in 1930 apparently raised the value of all farm buildings so that the data on this item are not comparable with those of 1925 and 1920. The changes in the questions on cattle seriously disturbed data that were expected to be comparable with those of earlier censuses.

Let us hope the time will come soon when a definite census policy and procedure can be established. Possibly before the 1940 census is taken a special commission should be set up to review all our past census experience and make recommendations for a definite policy. This must allow a certain amount of flexibility as to special questions from time to time; but the main body of questions should be largely standardized and thereafter changed only at long intervals if at all.

The limited budget for the 1935 census will no doubt force a severe shortening of the schedule. But the enumeration can be complete so far as the principal items are concerned. This will not save greatly in the expenses of the actual enumeration, since so much of the time is consumed in travel between farms. But it will save much expense of editing, tabulation, and publication.

One of the most serious deficiencies in recent censuses is in

the count of number of farms. The 1925 census was unusually complete in its count of small farms and deficient in its count of the larger farms. The 1930 census apparently dropped the small farms added in 1925 and many more besides,[3] but restored the larger farms. Land in farms and number of head of livestock were affected in more or less the same way in many states. In consequence the reported changes in average size of farms between 1920 and 1925, and 1925 and 1930, are not to be relied upon in most states. The position reached by several of us who have been studying this problem is that future censuses must collect data for all establishments with more than a low minimum of agricultural production—such as one cow, 25 chickens, $100 value of product—and let the Census Bureau determine later which to classify as farms of various descriptions. It seems clear from a careful review of the experience of the last two censuses that several thousand enumerators cannot be trusted to apply any conceivable definition of a farm in a consistent manner. This suggestion is one that can be carried out in the 1935 census.

In line with Professor Tolley's statement of the need in the census for complete coverage of all land are several suggestions as to preparing a map for each enumeration unit and locating each farm upon such a map. Dr. Gray and Dr. Baker have urged that the location of each farm be indicated by the enumerator on each schedule. Others have suggested that the enumerators be required to spot farmsteads on a base map. The Census Bureau, as a matter of fact, has been giving careful consideration to possibilities of this sort, especially to the possible use of aerial photography in constructing base maps; and some experimental mapping is to be undertaken under a grant of C.W.A. funds during the coming January and February. The technique for constructing base maps by aerial photography will probably be developed sufficiently by 1940 so that, if funds are made available, such maps can be made for the whole country. In any event, we can be sure that considerable parts of the country will have been mapped by 1940. Connecticut and Massachusetts have already authorized such mapping, and interest in it is becoming widespread.

For considerable section of the country, no doubt adequate base maps for census purposes can be constructed from county platbooks and other maps already available. The air mapping is particularly needed in the southern states and other section

[3] For the size-group "under 3 acres," however, the 1925 census count was low and the 1930 was high, exactly contrary to the counts for the size-groups above 3 acres up to 100 acres in several geographic divisions.

where county and township, precinct or parish boundaries are not really known, and some farmers do not know in which county they live.

It should not be necessary to wait until accurate base maps are available for the whole country before adapting the practice of locating farms and spotting farmsteads in sections where reasonably good maps are already available. Using idle engineers and draftsmen during this winter in making base maps from present sources would be an excellent C.W.A. project.

In the South, the census problem of the plantation and the cropper has never been satisfactorily solved. The data of changes in number of farms, size of farms, number of croppers, and the like, are not comparable between 1920, 1925, and 1930 for the South as a whole, nor between adjoining sections—North and South Carolina, for example. It is obvious that an increasing number of cropper units are being reported as separate farms, but one cannot know to what extent this reflects a change in farm organization or a change in enumeration procedure. Southern agricultural economists have never been satisfied with the classification of cropper units as separate farms. They say that the cropper is not a farm operator at the best, and that in a large number of cases he is merely a hired laborer whose employer gives him a little piece of cotton land to work on the side. The truth of this last contention was revealed by the answers to the question about labor off the farm in the 1930 census.

The solution now commonly being suggested for the foregoing problem is to make the "plantation" the unit, but list on the same schedule for each cropper separately the principal data as to the land he operates and his production and livestock. This suggestion is surely worth considering. Not until it is adopted will the Federal Census provide a description of the tenure organization of southern agriculture that is real and accurate, and comparable from census to census and place to place. This change should be considered even for the 1935 census.

The problem of census definition of farm population has not yet been satisfactorily solved. The desire of census workers to keep large numbers of essentially urban worker's families living in the country from being listed as farm population led to the inclusion in the 1930 census instructions of the italicized specification, "*and which is also locally regarded as a farm,*" as a necessary condition for classification as a farm family.[4] One

[4] *Instructions to Enumerators—Population and Agriculture,* Fifteenth Census of the United States, p. 25.

apparent effect of this was to reduce considerably in many sections the number of small establishments reported as farms. No doubt the farm population was reduced thereby along with the number of farms. The 1925 census of farm population appears to have been low even though small farms were rather fully counted. It would seem that this difficulty will be largely met by the same proposal as for the count of farms, namely, having the actual classification of farm population made in the central office. It could also help greatly if members of households were asked to list their secondary occupations more fully than in 1930, and also the nature of their labor off the farm.

No part of the census schedule is affected more by the constant shifting of dates of enumeration than that relating to livestock. Numbers of young stock on farms vary so widely between January and April that no satisfactory way can be devised for reducing the 1920, 1925, and 1930 census data of livestock to a comparable basis. The plan of asking farmers the numbers born in 1929, in 1928, before 1928, and since January 1, 1930, did not work out well. In the first place, in spite of the phrase "on this farm" in the heading of the livestock section of the schedule, apparently some livestock were reported which were born when indicated but were no longer on the farm. Probably, on the other hand, many spaces were left blank because the farmers did not know whether some of their livestock was born in 1929, 1928, or earlier. One can understand that tenants who had moved on to their present holdings since January 1 could not answer these questions for their predecessors. A common proposal for handling the livestock part of the schedule is to limit the census questions to number of head of parent stock, and depend upon data of market receipts or special surveys to provide ratios between young and parent stock. Such a suggestion should surely be considered seriously as a means of shortening the 1935 census schedule.[5]

As to the date of the enumeration, nothing new needs to be said. Prospects are favorable for getting a November, 1934, date for the next quinquennial census. If this happens, then all forces must be amassed to keep Congress from changing the 1940 date back to the spring. Nearly three hundred thousand farms are reported as "unclassified" in the type-of-farming results. Dr. Elliott says they could not be classified because the new occupant of the farm was unwilling to hazard an estimate as to the income of his predecessor.

[5] See this JOURNAL, April 1932, for a fuller discussion of the livestock census problem.

AGRICULTURAL STATISTICS VIEWED IN THE LIGHT OF A CHANGING AGRICULTURAL PROGRAM[1]

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The gathering of statistics of agricultural production was officially begun as early as 1840. The principal purpose then contemplated was that of an inventory. At that time estimates of total agricultural production had little significance in a market sense, partly because they were inaccurate, but more largely because transportation was so difficult and expensive that the predominating factor in price was the location of the product, not the total amount of it in the United States. To the New England farmer of the early part of the nineteenth century, it made little difference how much wheat was grown in Ohio since little of it came into direct competition with that grown by him.

Interest in aggregate figures for agricultural production grew rapidly as national communication improved and organized markets developed. Private estimating agencies grew up. The government estimates grew in accuracy, scope, and prestige. In recent years, the reports of the Division of Crop and Livestock Estimates have achieved wide acceptance as the most authoritative and comprehensive yet developed anywhere in the world. This rise in prestige has been especially marked during the past fifteen years because of the rising standard of professional ability of the staff and the spirit of open-minded consideration of constructive criticism which have characterized the service. Such studies as Sarles' bulletins on the adequacy and reliability of crop yield data and on farm price data represent published forms of many researches which have been made for internal use, ordinarily in a more informal way.

The special way in which the prices of many of the major agricultural products are established has led to much emphasis on estimates of total quantities produced. Undoubtedly the most direct usefulness of the production data of the Department has been in providing widely available, unbiased information as a basis for trading. Their general information and inventory aspects have of course been important. Data on agricultural prices, on the other hand, originally grew up almost wholly along lines contributing to estimates of gross values. For this purpose alone their value was too limited to warrant extensive activity in gath-

[1] Paper No. 52, The Giannini Foundation of Agricultural Economics. This paper was read at a joint meeting of the American Farm Economic Association and the American Statistical Association at Philadelphia, December 28, 1933.

ering them. With such a purpose uppermost emphasis very naturally was on prices that were representative of the main bulk of movement. For example, figures tended to represent those qualities known as bulk of sales and those commodity types which were particularly prominent in given markets. In other cases the figure shown was an average of a number of prices for different grades and types. Such a figure contributed to better estimates of gross value, and, consciously or unconsciously, this was the main objective in the minds of those collecting price data.

The period following the World War brought several outstandingly significant changes. One of these was a greatly disturbed situation in economic relationships and a greatly intensified interest in their study. Fortunately, this change was accompanied by the elevation to leadership of two men who had a large vision of the scope and quality of the work which should be carried on by the Department of Agriculture. Especially important was the impetus given to the social science aspects of agricultural study. Henry C. Wallace and Henry C. Taylor laid the foundation which has led to a statistical and economic development generally recognized as one of the best in the government. Its scientific point of view and high quality of personnel are matters for congratulation on the part of students of agricultural economics.

Since the establishment of the Bureau of Agricultural Economics, statistical work in agriculture has grown enormously both in scope and in refinement. The major objectives have changed gradually. Two new types of work have come prominently into the picture: one, the analysis of factors affecting the prices of farm products; two, a conscious attempt to use the information thus developed in guiding production along lines more profitable to farmers. During the same period another type of semi-statistical activity has developed rather extensively. This is the market news service which is designed to provide information on movements and prices in suitable form for day to day trading. This is mainly a direct service to individuals rather than a governmental function in the ordinary sense, though it also provides considerable amounts of data which, when reworked, are suitable for analytical and other governmental purposes. This program of statistical development has had in it much of the philosophy of conscious planning though this was viewed as a voluntary and educational program rather than one in which governmental pressure of a stronger nature would be used.

With the coming of the Roosevelt administration there has again been a significant change in program and leadership. It is

the purpose of this paper to discuss, so far as agriculture is concerned, some of the changes which this new program seems to imply with respect to the statistical activities of the Federal Government. In many respects the new program is only a further development of the one which was already under way. Many of the statistical needs are the same. Studies in price analysis, for example, and efforts at forecasting conditions had already stimulated the collection of better price and quantity data, and the basic data needed in land classification had already begun to take form. On the other hand, a program of definite and forceful government guidance does call for certain important changes in emphasis and completeness which are only now coming to be clearly recognized.

Although the data relating to agriculture are already among the most comprehensive in the government, any serious consideration of the present program inevitably leads one to the conclusion that expansion in certain directions is needed. But budgets are limited. In fact, the tendency is for budgets in the established government agencies to be pared drastically. If then expansion is to occur in some lines it must come either through inputs of new funds in regular appropriations or emergency allotments, or through still more drastic curtailments in those lines least directly related to the adjustment program. It is not likely that curtailments in work formerly carried on can be made on a scale sufficient to permit needed expansion in informational activity. Emergency funds of various kinds will be needed for these purposes. But here a number of difficult problems arise. Some wastage, some failure to coordinate, some overburdening of basic sources of information are almost inevitable. In most cases waste and lack of coordination will probably be kept at a minimum if additional funds are made available to the regular established agencies rather than used to develop new channels for collection of data. There are, however, some exceptions to this. A main objective in planning the work should be to avoid setting up on a continuing basis new statistical activities which will duplicate those now under way, except as the latter are to be definitely abandoned.

Sums which would probably be adequate to provide all needed expansion are being put into the various civil works projects. Unfortunately, however, these cannot be devoted to the most fundamental needs nor used to hire the kinds of people most needed. Worse than that, these huge expenditures for semi-statistical activity seem likely to result in public reactions both from

questionees and taxpayers which will be detrimental to more vital and permanent statistical services.

Let us turn, however, from these general problems to a more specific consideration of the kinds of data needed in addition to those already available. In some cases this need is for greater completeness, in others for certain qualitative changes which will adapt the data more specifically to present-day needs. One of the first things to appear clearly is the need for more accuracy and detail in the geographic breakdown of data. Prior to this time the crop and livestock reporting service has sought chiefly to attain accuracy of totals for fairly large areas. It has not felt warranted in publishing most estimates by minor units of area such as counties. In the main it was accuracy of the totals for states and for the nation that counted. These would serve for the more common types of price analysis and as a basis for trading. Such figures also served nearly all inventory purposes and were adequate as a guide in adjustment programs built on educational persuasion. Now, however, a new problem of large magnitude has come into the picture. No longer are state or district totals adequate. Totals by counties and even smaller areas are necessary, and they must be comparatively accurate. Furthermore, emphasis is now upon acreage, always admittedly a less accurate figure than that for production. Not only many thousands of dollars but much of the morale needed to carry through effectively the acreage adjustment programs depend upon county acreage totals which will be reasonably accurate and will command the respect of farmers and of the local control committees.

The Census has been the foundation for such acreage figures as we have had. Errors in them have had some tendency to be of a compensating type since in most areas there has been comparatively little incentive for conscious bias. In the cotton areas there has been persistent bias but the ginning records have afforded a check which made it possible to allow for this. Furthermore, the greater market significance of data on production has caused the well-known defects in acreage data to be given only casual recognition.

One of the most marked needs of the Adjustment Administration and of Crop Estimates is then for more accurate figures, at least by counties, for the acreages of crops grown. Presumably there will be a new census next fall with acreage tabulations available sometime in 1935. Even though too late for present needs this will be a valuable aid, if it can be accurately taken. But who knows what biases are likely to be in that census,

especially in the cash crop sections? We have established a powerful incentive for biased statements in areas where these have not been prevalent. In spite of the fact that an enumeration procedure is almost certain to miss some farms we need not be surprised if next year's census figures seem to show that the acreage reduction campaign of the Adjustment Administration has netted a five or ten per cent increase in acreage in certain sections. Nor, if this should be the case, need we take it as too sure an indication that the campaign has not been effective. On the other hand, biases may run in the other direction. Only by careful and critical study of the results in the light of all available check data will it be possible to form judgments concerning the allowances to be made for them. In some areas it may be possible, by means of sample area maps made by airplane, to measure this bias and to extend its applicability by inference to areas considerably larger than those it will be practical to photograph. Needless to say, both Census and Crop Estimates are aware of this problem. A satisfactory solution has not yet been found, though some ideas are under consideration. Can county control committees under the Adjustment Administration do a better job? It is an open question. It is not our present task, however, to solve these problems but to point them out.

Some statistical problems which have previously been the occasion for only academic interest, and for friendly verbal tilts with no casualties, have suddenly been thrust out into the cruel cold world of practical politics. Among these is that of measuring balance between returns to farmers and those accruing to other social groups. Some rough indication of this situation has been arrived at by taking the price relationships of 1909-1914 as normal and measuring the month by month and year by year departures from these. The adequacy of this measure has often been questioned both on economic and statistical grounds. The base period used is twenty years back. Very important changes in technique both in agricultural and non-agricultural methods have occurred since that time. This twenty-year period has seen the major part of the development of the automobile, the truck, the gasoline tractor, and the two-row corn plow, not to mention the milking machine, the combined harvester-thresher and many less noticeable developments such as the hogging off of corn.

Thus, even though we may accept the 1909-14 period as one of reasonably satisfactory group relationships, the contention that these price relationships should now prevail rests on the assumption that technical advance has been at the same rate in agricul-

tural and in non-agricultural production and physical distribution. Not only this, but, if we accept the philosophy written into the agricultural adjustment act, the rate of technical advance must have been virtually the same for the various individual types of agricultural production. In 1929 the farm price index for grains stood at 121 (1909-14 = 100), for fruits and vegetables at 136, for cotton and cottonseed at 145, for meat animals at 156, for dairy products at 140, and for poultry products at 159. These variations would be much larger if individual products were taken. Such differences represent significant variations in the underlying situations for these groups of products, and probably in the main a wholesome effort of the unregulated forces of economics to guide production into the lines which would best meet the desires of the available purchasers. This much I think can be granted without unwarranted assumptions concerning the merits of laissez faire. If now we seek through arbitrary action to bring prices of these commodities individually back to a prewar relationship to the prices of non-agricultural products, shall we not tend to block some much needed adjustments to changed producing and consuming conditions, possibly refusing to let society use some of its resources to best advantage? From a statistical standpoint, on the other hand, the shortcomings of an index number base twenty years old need not be elaborated here.

There is no intention to imply that many of those responsible for administration of the act are not aware of these problems nor that administrative programs are being laid out in blind compliance with the provisions of the act. To those who are dealing directly with them, those difficulties are all too evident to need much emphasis. The chief practical difficulty, as far as general policy is concerned, is that the "parity price" concept is too simple, too easily understood, too plausible. Its very faults from a scientific viewpoint are its virtues from a popular viewpoint. A very good substitute will be needed before this serene conjugal felicity of farmer viewpoint and the parity-price concept can be clouded by any thought of divorce.

But the purpose in raising this point is not merely to suggest the defects of this popular criterion of balance between agricultural and non-agricultural groups, but rather to urge the need for a new approach to this problem along more realistic lines. Even if the major group relationships were truly measured by this procedure, it is too simple a conception of the nature of the relationships involved. Great prosperity and acute distress can

easily prevail at the same time in the farm areas of this country. The same can be true in non-agricultural sections. For example, we may conceivably have major changes in area relationships which will materially enhance prices in some areas and depress those in others without markedly affecting the general index of prices.

What is needed is a better identification of group conditions, not in terms of commodities but in terms of people and of areas.[2] We have too often used the expression "the farmer' as though there were some representative individual who personified this group. The marked contrast in the characteristics, interests, and condition of the negro cropper farmer and of the highly capitalized, often well-educated farmer of the corn belt will be sufficient to illustrate the point. Similar striking differences between the commercial poultryman of the West Coast or New England and the family-flock owner of the Middle West will be readily apparent. What seems to be needed is a recurring estimate of incomes for all the major groups of the nation's population such that changing relationships between these group incomes can be recognized and studied. If this is to present a clear picture of conditions in agriculture, as compared with those in other lines of activity, there is need for some better appraisal of the non-cash elements of agricultural income. As usually reported, these items, which make up a large part of the farmer's income, are either computed at farm prices or ignored entirely. When farm incomes are then compared with non-farm incomes the picture, in terms of relative qualities of living, is much distorted.

No one who is at all familiar with the difficulties of computing income figures will fail to recognize the magnitude and difficulty of the task proposed. Yet the importance of a better understanding of these changing relationships is so great that a more definite effort to picture them seems warranted. Such computations need to be in terms of areas and, especially in cities, in terms of social groups. The Bureau of Agricultural Economics has gone farther in the study of this problem than have other agencies of the government, but its work in this field needs to be carried still further. There is a plan now under way for the development in the Bureau of Foreign and Domestic Commerce of an annual estimate of national income. The estimates for agriculture will be drawn from the Bureau of Agricultural Economics. It is important, therefore, that one form of these estimates be made as

[2] This is, of course, no criticism of the desire for information on the relationships between prices of given commodity groups. Often the welfare of an area or a social group is closely related to the price of a given commodity.

nearly as possible comparable to those for other income groups. The estimates of agricultural income have been notably improved in recent years. As yet, however, a satisfactory method of evaluating non-cash income has not been achieved, nor a suitable basis for making such comparisons as that just mentioned.

Study of market structure and of inter-area competition has been of growing interest in recent years but has not become very prominent in actual researches. These are, of course, closely related to the very evident needs of the Agricultural Adjustment Administration for better information on price spreads and on the effects of given processing and compensating taxes upon the competition between products and between areas. These latter problems go beyond price analysis and touch costs and the incidence of charges. They do, however, point clearly to a need for more price data which will give prices for specific types and qualities in different parts of the market area at the same time. It is surprising how difficult it is to make such analyses at the present time even for the most fully reported commodities. Some improvement in this respect is possible without much increase in expense, simply through a change in emphasis, but a sufficient development to meet the needs for studying price spreads will require considerable further development of price reporting. This problem is at present being subjected to considerable study in several agencies of the Government.

The other phases of information above implied, namely, those on costs and incidence of charges, probably do not lend themselves to general and continuous collection. Here the procedure apparently needed is that of specific analyses of the costs for fairly representative ranges of producers. Attention will need to be turned not primarily to average costs or to imputed returns on investments but to the specific costs or savings resulting when production is enlarged or contracted by given amounts. It would be a fatal mistake to assume that costs would be reduced in the same proportion as production is reduced. Both consumers and producers would be losers. Study will need to center on the nature of marginal production as well as on marginal land, and should seek that balance which will involve an effective use of resources. Such an approach is the antithesis of regimentation, or uniform percentage change, and it seems imperative that both the Agricultural Adjustment Administration and the National Recovery Administration develop as soon as possible methods which will not tend to lock individual activities in an unduly rigid and highly artificial framework. Provision will ultimately need to be made

whereby some farmers may expand their production while others go out of business entirely and possibly others contract more than the average percentages. The time is not now ripe for such a change and the only possible line for immediate attack is by uniform adjustments, in terms of percentages. It is inconceivable, however, that individual situations can be frozen in a given stage for any very long period. When provision is made for adjustments such as those mentioned, there is likely to be need for a fuller and more realistic interpretation of typical cost situations than is now available.

Closely related to the last comment is the fact that the new program in agriculture involves taking out of production considerable acreages of good crop land. If planned adjustments in acreage are to be continued there is an unmistakable coming need for more detailed information on the productivities of given parts of the land area. The greater emphasis on geographic relationships which has already been mentioned under estimates of crop production come again into prominence here. So long as the procedure contemplated was that of voluntary adjustments in the light of individual self-interest, accurate estimates of total production were the principal concern. But when the program involves comprehensive land planning and authoritative withdrawal of land from production, detailed and fairly accurate yield data for fairly small areas become imperative. Whether these can best be achieved through extension of the work of the Division of Crop and Livestock Estimates or by more specific non-repeating studies is an open question. Here again the possibilities of an accurate periodic enumeration assume importance but the limitations due to the erratic nature of production in marginal areas must be seriously considered. Such a program does not, of course, necessarily mean complete removal of land from production since land planning often means merely applying more extensive or intensive methods to lands that appear to be submarginal for given uses. Under present conditions, the shift will usually be in the direction of more extensive methods.

Another line of governmental activity relating to agriculture has assumed large proportions within the last year. The Farm Credit Administration has come to occupy a much larger place in farm finance than the group of federal credit agencies which preceded it. Heretofore, with the bulk of the lending to farmers in the hands of a large number of private agencies intimately in touch with local conditions, extensive statistical information on farm credit has not seemed essential. Now, with this large con-

centration of loaning activity and with a daily necessity for decisions of far-reaching consequences, there is evident need for much current information promptly available and geographically reported. The flow of credit and income and the various changing conditions in agriculture must be more fully pictured than in the past if this huge agency of the government is to function effectively.

In the relations of the Bureau of Agricultural Economics with both the Agricultural Adjustment Administration and the Farm Credit Administration serious problems of coordination must be met and solved. There is real danger that, in the need to meet and deal with immediate problems, there will be unwise shifts of personnel and inadequately considered reorganization of the work already established which will destroy important going-concern values. The building up of personnel, of contacts, of procedures and organization, takes considerable time even under the best of conditions. For the present, it would appear to be conducive both to largest immediate results and to conservation of established values to look to maintaining intact, for the most part, the personnel and organization of the Bureau of Agricultural Economics. The two operating agencies must inevitably build up extensive organizations for handling day to day operating and policy problems. For the more general analytical studies needed, it would seem to be in the interest of efficiency that these be taken to the Bureau staff rather than that the various Bureau staff members be drawn over into the operating agencies to make such analyses. Once a given individual having certain particular abilities and experience is drawn into a given section of an operating agency, his usefulness and availability for other sections and for general Bureau activities are largely terminated since his time is likely to be so intensively occupied in the particular subdivision, much of it on relatively routine work, that his largest usefulness is sacrificed.

More definite reorganization and transfers of personnel may eventually be needed. It is yet too early to see what these should be. The Bureau's present work includes large amounts of regulatory as well as of analytical and data-gathering activity. The Adjustment Administration now requires considerable analytical work of a peculiarly intricate and difficult kind. It seems likely, however, that as its major policies and procedures become more settled, it will approach more nearly to the regulatory functions than to the analytical. It seems possible therefore that a re-

organization of functions a year or two hence might follow different lines than would seem logical at the present time.

There is, of course, no intention to imply that certain transfers of personnel are not in the best interest of the whole joint program. In many cases the long experience with certain classes of statistics which certain Bureau specialists have had is of very great value in the immediate operating problems of the Adjustment Administration. Where subordinate workers can carry on established work or satisfactory new personnel can be brought in, transfer of given workers may be highly desirable. It would seem, however, that the interests of both agencies will, for the present, be furthered by giving first consideration to maintaining the current series and organization of the Bureau, drawing out personnel only as these can be conserved. On the other hand, the needs of the adjustment program appear to warrant the Bureau in giving precedence, wherever possible, to current analytical problems as compared with those which can be deferred.

The remarks made earlier in this paper have indicated a fairly substantial array of statistical needs yet to be provided for. They are by no means an exhaustive summary of the needs not adequately covered. Certain of these will also be discussed in the following paper by Mr. Purves and Dr. Stine. While much remains to be done in the way of providing basic statistics, the prospect is not one to warrant pessimism. In the main, the field of agricultural statistics is well covered both as to scope and quality. A changing program implies obsolescence as well as new additions, and it may be that further studies will reveal possible reductions in scope or changes in timing which may permit of shifts in the directions here indicated. This is in fact occurring almost unconsciously as a result of pressure on the Bureau of Agricultural Economics for studies and data which are of immediate concern in the present program. Transfer of personnel for these purposes inevitably withdraws activity from other lines. Some of this means mere postponement of work that will later have to be done. In other cases it is an actual substitution of one line of activity for another.

From the standpoint of expense, it is to be regretted that the recent shifts in emphasis point so much to an enumeration type of approach. Emphasis on geographic detail implies more resort to enumerative procedure. Yet this is by far the most expensive type of collection in statistical work, and in many ways an unsatisfactory type since complete enumeration is an ideal which

is virtually impossible of attainment, while incomplete enumeration is, for many purposes, less satisfactory than good estimating. With the large and growing need for additional data the Department of Agriculture will undoubtedly tend to extend and improve its sampling and estimating activities, turning to enumeration only where this is unquestionably essential for basing purposes. As yet, the possibilities of collecting primary data through the various agencies of the Agricultural Adjustment Administration have not been very fully explored. This source may prove more useful than now seems likely.

SOME NEEDED DEVELOPMENTS IN SCOPE AND TIMING OF AGRICULTURAL STATISTICS[1]

C. M. PURVES AND O. C. STINE
BUREAU OF AGRICULTURAL ECONOMICS

While much progress has been made in the past ten years in improving agricultural statistics there is need for still more information about farm conditions, and a vast amount of work must be done to improve and analyze the data already available.

The purpose of this paper is to bring out, first, some of the weaknesses of the present available agricultural statistics, then to recommend improvement in our present statistical series, and lastly, to mention some additional statistics that are needed in order to present more accurately the farmers real situation and to aid in carrying out properly the program of the Agricultural Adjustment Administration and other government organizations.

Before discussing the specific types of agricultural statistics it might be well to mention some of the reasons why our present statistical data need improving. Large volumes of statistics are being collected and recorded by people who have thought but little about their uses. In some cases the data collected are by-products of other activities, or the beginning was made for some special purpose that has been forgotten. The collection and recording of the data have become a routine matter, continued without reference to the representativeness of the data or their value in analysis. Any attempt to make a comprehensive review of the field reveals many gaps, and many specific problems arise which can not be dealt with because of insufficient data. The gaps are difficult and sometimes impossible, to fill but more often they are not filled because the job is difficult or because of the lack of time and personnel for doing the job. Another weakness often discovered is that attempts have been made from time to time to meet specific needs by building estimates out of thin air, and these become the basis for continuing estimates without ever putting a firm foundation under them. Furthermore, it is sometimes impossible to fit together statistical series relating to the same commodity; as for example, it may be impossible to harmonize estimates of production with receipts at markets, or to obtain a satisfactory estimate of marketings from several different indications. A notable example has been the confusion in our

[1] This paper was read at a joint meeting of the American Farm Economic Association and the American Statistical Association at Philadelphia, December 28, 1933.

dairy statistics. It is only quite recently that estimates of dairy production and utilization have been harmonized.

The failure to make adjustments for constantly changing conditions is a further criticism of our present statistical series. The shifts in regions of production, in methods of marketing and various other changes must be recognized and measured to make our statistical series more accurate and comparable over a period of years. The lack of planning for these changing conditions or of adjusting for them as they occur, is one of the principal reasons for so many of the historical series of statistics being misleading.

Now let us turn to some of the specific statistical series which need improvement. Statistics relating to the marketing of many farm products have become almost worthless because of the increase in the movement of farm products to market by truck. The marketings of many farm products, particularly fruits and vegetables are usually measured in car-lot shipments. If the rapid increase in truck movement is forgotten for a moment this seems like a fair index of marketings but on examination of the data it is found that the amount of produce ordinarily shipped in a car varies greatly, sometimes as much as 50 per cent, in different localities, and furthermore, that adjustments are not made for mixed cars or for differences between the size of the cargo of express and freight cars. When these inconsistencies in the data are considered along with the fact that truck movement of some products exceeds 50 per cent of the total movement it is quite evident that car-lot shipments not only fail to measure marketings but are actually misleading, particularly when comparisons are being made over a very long period of time or between different regions.

Two improvements which would increase materially the value of statistics relating to the marketings of fruits and vegetables are, first, the conversion of car-lot shipments into a common unit of size or weight so that shipments for all regions would be comparable, and secondly, more complete information on the movement of these commodities by truck. It is realized that the wide variety of containers used to market fruits and vegetables and the large number of crops makes the problem of converting shipments into a common unit a very difficult task, but it can be done as it has been done for many of the other crops. However, the need for measuring in some way the movement of the various fruits and vegetables by truck is more important. Some effort has been made to measure truck movement by recording truck unloads in some of the larger cities and by checking truck move-

ments through certain strategic points. This work needs to be extended greatly and the results added to car-lot shipments to arrive at a more accurate measure of the total movement of fruits and vegetables.

More complete information on the movement of livestock to markets and to feed lots as well as on the movement of other farm products would provide valuable data for estimating income, for making consumption studies and for regulating the flow of farm products to market. However, the high degree of perishability of many fruits and vegetables necessitates having both accurate and timely statistics if they are to be of value in regulating the movement of these commodities to market.

Information on the movement of specific commodities is indispensable to the agricultural industries submitting marketing agreements to the Agricultural Adjustment Administration. Some of these agreements provide for restricting the production of the commodity under consideration, others provide for regulating the movement of the product to market and still others for both restriction and regulation. Where the regulation of marketings is to be attempted the records of past movement to market are about the only source of data for determining the marketing practice to adopt. The success or failure of such regulation depends very largely upon the accuracy of our past records of market movement.

The various organizations entering into marketing agreements will need to collect statistics which are both more accurate and more detailed than any heretofore available. If properly assembled and analyzed these statistics would add greatly to our present knowledge of the marketing of perishable products. They would provide a much needed check on our present production and marketing statistics. They would also provide data for an analysis of the relationship between marketings and price which would aid in coordinating the movement to market and the regulation of marketings and productions between different areas.

In the preceding paper, Dr. Benedict has stressed the need for more price data on specific types and qualities of farm products in different parts of the market area at the same time in order to study the spread between prices received by the producer and prices paid by the consumer of agricultural products. For a study of distribution these data must be supplemented by more data as to the machinery and costs of distribution. Data are needed as to the volumes of the different farm commodities moving through different channels of distribution and the number of wholesale

and retail plants that are involved in handling through these different channels. Wages, transportation charges, and other costs data must also be associated with channels and methods of distribution.

Dr. Benedict's paper has also discussed the need of additional data on farm income in order to present a clear picture of the conditions in agriculture as compared with those in other lines of activity. He recognizes the difficulty of doing this. We all recognize, however, that any reasonably close approximation to the level of and changes in agricultural income is useful for many purposes, even though these data may not present an accurate basis for comparison with the incomes of other groups, in determining differences in well-being, or in adequacy of the income to provide for a desired manner of living. Much needs to be done to improve the basis for estimating currently income from marketings of farm products and the farm expenditures. Furthermore, the national estimates of both income and expenditures should be by states. Many do not realize that the data available for estimating farm income and expenditures by states are much less satisfactory than those for the country as a whole. Improvement in statistics of marketings, including coverage of more markets, could contribute greatly toward making state estimates of income from agriculture.

More information is needed on the income to farmers from other sources than agricultural production as well as a more complete classification of the types of farmers. A figure of gross income from agricultural production is significant in itself but it should not be overlooked that some farmers have income from other sources. In the first place, nearly 5 per cent of the farmers in the United States in 1930 reported occupations other than farming in the occupation census. In addition, there are part-time farmers, gentlemen farmers, partially retired farmers, croppers and self-sufficing farmers, a large part of whom are not carrying on farming as a business but are laborers being paid in kind or are farming to provide some additional income or as a means of occupying their time in some useful manner. The extent of this condition in agriculture is indicated by the fact that 28 per cent of those engaged in farming produce less than 3.5 per cent of the farm products sold from farms, according to an analysis of the census of agricultural income for 1929 made by Dr. O. E. Baker. No doubt a few of these farmers were making a business of farming but the majority could hardly be classified as full time farmers depending upon their agricultural income for a

living. If, when comparing the incomes of farmers with the incomes of persons engaged in other industries, the remaining 96.5 per cent of income from farm produce sold were divided among the other 72 per cent of farmers, the average gross cash income per farmer would be much more comparable with the income of business men in other industries.

With the migration of people back to the farm and the marked increase in the number of subsistence farms which have occurred since the 1929 Census was taken it is imperative that more detailed information be collected regarding the distribution of farm income. Such information would be especially valuable at present in showing the condition of those who are now practicing subsistence farming and would provide a groundwork for more systematic planning for the future of this movement. The 1930 Census report on farm income has furnished valuable information on income by different types of farms and in different areas. Such studies should be continued at 10-year intervals and the analysis carried even further than was done in the 1930 Census.

Data on farmers' expenditures are also necessary in making an analysis of the farmers' well-being. In the past 25 years farmers' expenditures for production have changed considerably due to the introduction of mechanical power. This has required a marked increase in the cash outlay of farmers in carrying on their production activities. Unless this cash outlay is deducted from cash income, it is impossible to get an adequate measure of the change in the farmers' net income over the past 25 years. Some analysis has been made of farmers' expenditures but such estimates have been derived largely from data collected for other purposes and only partially reflect the actual change in expenditures from year to year. Furthermore, an analysis of expenditures has never been made by states. A few of the more important expenditures such as those for hired labor, fertilizer and feed have been collected by states on census years and information is available on farm indebtedness and taxes by states, but in most cases no means has been provided to measure the changes in these expenditures from year to year either by states or for the country as a whole. Sales of farm machinery in the United States were collected by the census from 1921 to 1931, but the collection of this information was discontinued in 1932. Since farm machinery is sold almost exclusively to farmers this series provided a means of estimating farmers' expenditures for machinery and the discontinuance of this series leaves us without an adequate measure of the change from year to year in the ex-

penditures for this important group of commodities. Data for estimating other farm expenditures are almost entirely lacking even for such important items as automobiles and trucks, buildings, and repairs, and cost of operating automobiles, trucks and tractors.

Information on many farmers' expenditures is so meager that they can only be approximated for the country as a unit, and estimates by states are beyond consideration. Before these expenditures can be estimated by states with any degree of accuracy a survey must be made of the amounts spent by farmers for different commodities and services. If such a survey were made of sufficient size to be representative of all parts of the country and if, at the same time, a method was set up to collect sample data each year to keep the information up to date, it would be possible to make estimates of farmers' expenditures by states as reliable and as detailed as the estimates of farm income. However, until more data are collected for the purpose of estimating farm expenditures, the estimates can be little more than approximations for the entire country.

Because of the lack of accurate data for measuring farmers' expenditures, we are unable to determine how changes in income affects the expenses of agriculture as an industry. Since 1930, farmers' expenditures have been drastically curtailed, but the extent to which expenditures have been reduced can not be accurately measured, nor can we determine the deterioration of the farmer's buildings and equipment due to this curtailment of expenditures. In years of relative stability of incomes and prices, such as occurred from 1924 to 1929, many of the farmer's expenditures were relatively stable from year to year, and during that period it was possible, by an analysis of the various studies made of farm practices, from census data, and from other statistical material available, to determine approximately what farmers' annual expenditures were for the numerous commodities which they bought. However, the estimates arrived at in that period are not representative of the more recent years of rapidly shrinking incomes when the farmer's distribution of his income had to be changed materially.

No method has yet been devised for measuring either the annual change in the number of farms or the amount of land coming into or going out of cultivation. With the movement of population back to the farms in recent years such information is of vital importance for accurately measuring the changes in agricultural production, income and expenditures. Since 1930,

there has been a marked decline in the movement of population from the farms to the cities, and some increase in the movement from cities to rural sections. From comments by people working in the states as well as from observation when traveling we know that thousands of dwellings on formerly abandoned farms are now being occupied, but we do not know to what extent these farms are being worked. Until more information is available regarding the change in farms from year to year it will be practically impossible to estimate the trend of agricultural production, as our present system of crop estimating records only the changes in acreage devoted to the different crops on those farms which have been in operation since the last census was taken.

In connection with the discussion of measuring the change in the number of farms one might also consider the definition of a farm to see if improvements are needed to make the farm census more useful. According to the census definition, any tract of land of 3 acres or more operated by one person is a farm. A tract of land containing less than 3 acres is not considered a farm unless it produced agricultural products valued at $250 or more in the census year. One of the difficulties resulting from such a description of a farm is the changing values of the products from 3 acres or less. The same minimum valuation of $250 has been carried by the census since 1910. During the period since 1910 prices of farm products have been at widely different levels in census years which would lead to considerable variation in the value of products produced on these small plots and consequently to variation in the number of these small plots included as farms. In 1920, when farm prices were very high a number of small plots might have been classed as farms which did not come under this classification in 1910 or 1930. If a minimum valuation of the produce from these small tracts of land must be included in the definition of a farm then it should be varied according to the variation in the farm price of agricultural products. This would result in the number of small tracts included as farms being more nearly the same each time the census is taken.

The census definition of a farm also includes many plots exceeding 3 acres which produce much less than $250 worth of farm products. According to the Census, "enumerators are instructed to report as a farm any tract of land of 3 acres or more used for agricultural purposes, no matter what the value of the products raised on the land or the amount of labor involved in operating the same." Thus a worker in a factory living upon a 10-acre tract of land may raise less farm produce on 10 acres than is ordinarily

grown in a city garden yet the 10-acre tract would be a farm according to the census definition.

The present method of taking the census does not provide a means of obtaining a measure of total agricultural production in the United States. Because of the difficulty in defining a farm in such a way that all enumerators will consider comparable tracts of land as farms in all areas it would be better to take a complete census of all agricultural production and gather sufficient information on the schedule so that the Census Bureau could decide whether or not a tract of land should be considered a farm. In defining a farm the Census Bureau should take into account (1) the acreage cultivated or farmed, (2) the amount of farm produce raised, (3) the utilization of the produce, (4) the income derived from farming and (5) the amount of labor spent in producing agricultural products. Such a census would provide (1) a measure of total agricultural production, (2) the amount of farm products produced in city gardens and on other plots too small to be classed as farms, and (3) information for a detailed classification of production and income on those tracts of land which are included as farms.

An agricultural census should be supplemented with a census of the strictly rural population, with sufficient detail to classify rural population as to farm population and non-farm population. A more detailed classification of our rural population would be valuable for many purposes. Some of the uses which could be made of such data were pointed out under the discussion on problems relating to farm income. A more detailed classification of farms would also help to avoid many of the varied conceptions of what constitutes a farm, which often lead to apparent lack of agreement between series of closely related statistics. This is illustrated by statistics available on the change of farm population and the change in the number of persons (family and hired) employed per farm. As farm population has been increasing since 1930, one would naturally expect that either the number of persons employed per farm would show an increase or that the number of farms had increased. It is estimated that the farm population increased 7 per cent from January, 1930, to January, 1933. During that same period the number of combined family and hired laborers employed per farm decreased from 10 to 15 per cent, the difference depending upon the time of year when the comparison is made. If these two series of data are correct, then the number of farms must have increased during that period from 19 to 23 per cent or roughly 1,300,000 farms. While information

from crop reporters indicate that the increase in the number of farms since 1930 has been negligible the question as to how representative our crop reporters are of the total farm population still remains. This apparent discrepancy may be the result of a number of persons living in abandoned farm homes but not being employed in agricultural production. In other words, our rural non-farming population may have increased since 1930, while the rural farming population, including hired labor, may have continued to decrease.

Many of the discrepancies between closely related statistics are due to the lack of coordination between the several agencies collecting statistics. These various agencies often fail to recognize that the field of collecting statistics is no longer a new field to be exploited, but that each new series of data now collected should harmonize with those already available and supplement our present series to make them more useful. As statistical data become more numerous the problem of coordination between the different series becomes increasingly difficult. The recently established Central Statistical Board may be very helpful in coordinating the work of the federal government agencies. Another of its functions is to review the various statistical series now being collected and to recommend improvements and additions, thus increasing the scope of statistical data available for analysis of agricultural problems.

The analysis of consumption statistics is probably the most neglected of any field of agricultural statistics. While there are considerable data available which could be used in consumption studies, most of these data are incomplete and missing links need to be supplied. Studies of consumption are so closely related to retail prices and to marketing that improvements in these fields will greatly increase the available data for such studies. Production figures are of little value in making consumption studies because many farm products are consumed in several forms and studies must be made of each type of consumption. For example, strawberries may be either consumed in a fresh, canned, preserved, or frozen form. In making a study of strawberry consumption, it would be necessary to know the amounts marketed as fresh fruit and the amounts processed. Likewise in a study of the consumption of whole milk it is necessary to have not only the amount of fluid milk sold, but also the amount of whole milk that is converted into cream, cheese, ice cream, etc.

The present data available on retail prices are insufficient for carrying on retail consumption studies. Prices paid by consumers

are now collected only for the more durable and more common items of food, which are sold throughout the entire year. Furthermore, very few retail prices are available on commodities other than foods. Steps are now being taken to make a more detailed collection of retail prices. Prices are to be collected upon a larger number of items and will be collected in cities and towns. Such data will not only be of material aid in making detailed consumer studies but will become more valuable as time goes on, and in historical series of these more detailed prices becomes available.

The results of some of the preliminary consumption studies which have already been made from the data now available on consumer incomes show conclusively the value of such studies. One such study comparing consumers' expenditures for meats and consumer incomes indicates that, for any given level of consumer income, the amount spent for meat is fairly constant regardless of supplies. If this is true, it indicates that farmers can not add greatly to their incomes from livestock by curtailed production. It also indicates that any tax on meats will be largely, if not entirely, passed back to the producer. Such studies as these for a large number of agricultural commodities would be invaluable as an aid in formulating policies under the present agricultural adjustment act.

In concluding I would like to emphasize that most of the points brought out in this paper are recognized by workers in agricultural statistics. Steps are being taken to overcome the weaknesses and gaps in our present statistical data, but progress is slow. Much time and research is involved in improving our present statistical series. As new data are collected and improved methods are derived for continuing our present series, the data already available must be connected with the newer data so that the series are comparable for the entire period. The problem involved is illustrated by the recent change of our crop estimates to a census basis where no better basis could be provided. In order to make past estimates comparable with those being currently issued all crop estimates from 1866 to 1929 had to be revised to the census basis. Such revisions and improvements require time, personnel, and money. However, the fact that many of these imperfections are recognized is important, as one of the first steps toward improvement is the knowledge that improvement is necessary.

TRADING IN FUTURES AND PRICE FLUCTUATIONS

PAUL MEHL
GRAIN FUTURES ADMINISTRATION

Prices of grain can be studied from two viewpoints, namely, long time and short time periods. Over a long period of time prices must reflect supply and demand conditions, but this does not necessarily mean stable prices. The earlier work done by Dr. Bosland covering the period of 1897 to 1914 gave a correlation coefficient of —.74 between changes in the deviations of the supply of wheat (current production plus world carryover) from trend and the changes in the deviations of purchasing power (crop year average of cash wheat in the Chicago market divided by the Bureau of Labor statistics index of wholesale prices) from trend.[1] Dr. Killough obtained a coefficient of —.80 by correlating similar data for the period from 1891-1913. The size of these coefficients shows that the world supply is the dominant factor affecting the annual price of wheat.[2] For short periods of time this relationship between supply and demand may not exist. Excessive speculation by the public and large scale operations of individuals or groups of traders sometimes pull prices out of line and cause fluctuations of considerable size which seriously disturb the market and do injury to producers and merchandisers of grain.

The movement of prices of wheat futures at Chicago over a comparatively long period of time, say a month, is comprised of changes which occur during the trading session on the Exchange plus overnight changes, i.e., from the close of one trading day to the opening of the market on the following day. The latter may reflect new valuations occasioned by events occurring during the previous trading day, such as heavy concentrated selling before the close or overnight changes in Liverpool prices. These valuations are registered in Chicago at the opening, when prices may be sharply higher or lower than the previous "close."

The extent to which various individual factors influence overnight changes has as yet not been measured. The Food Research Institute, however, has done some work pertaining to overnight changes.[3] It found, among other things, that overnight changes on the Chicago and Winnipeg markets during the winter months

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[1] Forecasting the Price of Wheat—Journal of American Statistical Association, June 1926, Volume 21, pages 149-161.
[2] What Makes the Price of Oats? U. S. Department of Agriculture Bulletin 1351, September 1925, page 24.
[3] Wheat Studies of Food Research Institute, Volume X, Number 2, November, 1933, page 66.

tend to follow the changes occurring in the Liverpool market after American markets have closed. During the summer months the order was found to be reversed: Chicago and Winnipeg markets then taking the lead. In addition, it has been found that Chicago and Winnipeg markets "originate" approximately two-thirds of all price movements, and Liverpool only about one-third.[4]

The factors which influence volume of trading in futures, and the effect that such trading has on intraday and daily price movements, have been studied to some extent by the Grain Futures Administration.

The intraday changes, excluding overnight changes, that occur in prices of futures on the Chicago Board of Trade are the result of trading by individuals, part of whom are buyers and part are sellers of futures. Some of the transactions may be small in amount and others large.

Although for every purchase of futures there is a corresponding sale, price changes occur because of the difference in the aggressiveness of buyers and sellers. This is reflected in the daily price changes, which may be large or small. If the price declines, it is apparent that selling is the more aggressive, and if there is an advance, buying will be found to dominate. The intraday movements in prices on a given day are many and in various directions, upward, downward, and sideways. The more active the trading, the more frequent and the greater is the extent of the movement.

It is not necessary to know why trading takes place in order to show its effect on prices. By correlating the daily volume of trading figures in Chicago wheat futures, as released daily by the Grain Futures Administration, with the daily range in the price of the dominant wheat future at Chicago, one will find that, on the average, the greater the volume of trading in wheat futures the wider is the daily range in the price of the dominant future. Such a correlation was made covering 2,704 trading days during the years 1922-1931, excluding the year 1925. The correlation coefficient obtained was +.80. The regression equation for the line of least squares was $Y = .2756 + .047X$ and the standard error of estimate was $Syx = .669$.[5]

The results of the study clearly show that, on the average, the smaller the volume of trading at Chicago the narrower was the

[4] Page 51, Wheat Studies of the Food Research Institute, Volume X, Number 3, November, 1933.

[5] A copy of the scatter diagram showing the regression line may be obtained from the writer.

spread or range between the "high" and "low" prices of the dominant or most active future for the day, thus indicating that the market was more stable at such times than when the volume of trading was larger. Thereby is revealed the fallaciousness of the sweeping claim frequently made, that the larger the volume of trading in futures the greater is the stability of market prices. The study further suggests that excessive trading due to speculation, not engendered by changes in fundamental conditions such as changes in crop conditions, results in wider daily price swings and contributes to needless instability. That a larger volume of trading does not necessarily lead to greater stability is also revealed by Mr. M. J. Fields of Harvard University who in his recent study demonstrated the growing instability of stock prices through the period of 1872-1927 when the stabilizing influence of speculation and other market developments should have been greater than it really was.[6]

As the length of trading day is fixed, extending from 9:30 A.M. to 1:15 P.M., except on Saturdays, it can be expected that large volumes of trading will produce a greater number of intraday 1/8 cent fluctuations as compared with days when the quantity of trading is small. The correlation coefficient showing the relationship between the daily volume of trading in Chicago wheat futures and the number of 1/8 cent fluctuations in the price of the dominant future was found to be +.887. The period covered included 2,069 trading days during the years 1924 to 1931, excluding the year 1926 and from October 1 to November 14, 1925. The regression equation is $Y = 98.86 + 7.55X$ and the standard error of estimate or Syx is 86.90.

Because the volume of trading in futures is closely related to price changes, the question arises as to what factors induce trading and, therefore, price movements in wheat futures. There are many factors which might cause individuals to trade. Among those which influence their trading and, therefore, affect the annual volume of trading in wheat futures at Chicago are changes in fundamental conditions such as increases or decreases in the annual world supplies of wheat and more particularly in the four large exporting countries, the United States, Canada, Argentina, and Australia.

A study shows that a close inverse curvilinear relationship apparently exists between the annual world supplies of wheat (ex Russia) and the annual volume of trading in Chicago wheat

[6] Page 652, Speculation and Growing Instability of Stock Prices by M. J. Fields, American Economic Review, Volume 13, No. 4, December, 1933.

futures, by crop years, covering the period of 1922-1932. The outstanding exceptions were the crop years, 1922-23, 1923-24, and 1929-30. In general the volume of trading in wheat futures was found to decrease as the size of the world supplies increased. With the previously mentioned exceptions, a high inverse relationship was also found apparently to exist when only the yearly supplies of wheat in the four chief exporting countries were compared with the annual volume of trading by crop years. When the combined production and carryover of wheat in the United States and Canada was compared with the annual volume of trading, the inverse relationship also appeared to be close. The principal exceptions were the years 1923-24, 1924-25 and 1929-30. With the stated exceptions, it can be said that the greater the supplies of wheat the smaller is the volume of trading in wheat futures at Chicago.

The largest volume of trading in wheat futures on record, omitting the year 1929 when it was slightly larger, amounted to 16,587 million bushels. This was for the crop year of July 1, 1924 to June 30, 1925 when world supplies (ex Russia) at the beginning of the period amounted to 3,642 million bushels and the United States and Canadian crop and carryover totaled 1,291 million bushels. When the world supplies increased at the beginning of the 1930-31 crop year to 4,610 million bushels and the United States-Canadian supplies to 1,681 million, the total trading for the year was but 8,360 million bushels, or approximately fifty per cent of what it was during the year when world supplies were almost a billion bushels less and the United States and Canadian supplies about 390 million bushels smaller. The reason for the smaller volume of trading is that when supplies are large prices are expected to decline, and the smaller speculators who generally prefer to be buyers are not interested in the market when the outlook is for falling prices. Small crops with light carryovers with corresponding advances in price are elements which induce speculation on a large scale. This is not only true for the small speculators but also for the larger professional operators.

The larger the supplies of wheat the greater is the quantity of hedges placed in the market. Because of fear that the liquidity of the market may be restricted and this increased hedging be handicapped it is frequently argued that no limitation should be placed on the large scale trading operations of large speculators which sometimes unduly affect prices. Studies made from time to time of the open long commitments held by small and large spec-

ulators, however, revealed that the hedging load in wheat is carried by the small speculator the greater part of the time. During the years 1925 to 1932 inclusive the large speculators were, most of the time, on the short side of the wheat market adding to the hedging load instead of aiding in carrying the load. The greater part of the time the combined net position of the group of large speculators was found to be the opposite of the smaller traders.

Price changes brought about by large scale operations on the part of one or more prominent speculators increases the volume of trading. In part, this is brought about automatically by resting orders and stop-loss orders being uncovered. Other new trading also appears because of the price change brought about by the large scale operations. Some of this additional trading comes from scalpers, and a part from speculators who are making new commitments which they intend to hold open for a profit over a period of time longer than a day.

The influence that the trading of the large speculators have on prices of wheat futures is marked. From one-half to more than two-thirds of the time when their combined net trades were 500,000 bushels or more in a single or all wheat futures at Chicago, the price of futures moved in the same direction as their trading.[7] As the size of the combined net trades increased the percentage of time that the price moved in the direction of their trading grew larger. This is of great interest in view of the fact that the monthly combined trading of the large speculators, those having had open commitments in wheat futures to the extent of 2,000,000 bushels, was generally less than 3 per cent of the monthly trading for all customers.

The fact that prices of futures moved in the direction of their trading leads one to believe that over a period of time the larger operators made a profit on their transactions in futures. The smaller traders then apparently must have taken the loss. That this was the case is verified by a study made by the Food Research Institute which states in one of its publications, ". . . future traders carrying hedges have taken a larger proportion of the total losses on speculative holding of wheat than they have of the total gains. Since during the forty-one years under review speculative (gross) losses have considerably exceeded speculative (gross) gains, it appears that over this period futures traders carrying hedges must have taken losses greatly in excess of their gains. . . ."[8]

[7] Page 50, Senate Document 123, 71st Congress, 2nd Session, 1930. Pages 30-36, U. S. Department of Agriculture Technical Bulletin 79, 1928.

[8] Page 432, Wheat Studies, Volume 7, No. 8, July, 1931.

There are days when the trading of the large speculators, because of its size and concentration, produces sharp, wide fluctuations. Such occasions generally occur when they are closing out their open lines. For example, on March 13, 1925 when the price of May wheat at Chicago declined 14¾ cents from the previous close, March 17, with a decline of 11½ cents, March 30, when May wheat declined 10½ cents. More recent days, occurring in 1933, are July 19 to 20, inclusive, when the price broke about 25 cents in two days, the largest decline in the history of the Chicago Board of Trade for such a short period of time.

Although there are seasonal movements in the amount of commitments that are open, taking the Chicago market as a whole, no such movements occur with respect to the amount of trading that is carried on in futures. There are, however, what are known as periods of accumulation and liquidation which refer to those stages during the life of a future when long and short lines are being built up and later closed out either by the delivery of grain or through pit transactions.

Three-fourths of the days, changes in the aggregate open commitments make up only 5 per cent or less of the total daily volume of trading. Should the volume of trading be unusually large, the open commitments will change rapidly. On the other hand, if the trading be relatively small, the increase or decrease will be correspondingly slow. The open commitments in a given future reach their peak about the same time each year. Until the maximum of the open commitments is reached the character of the trading in the future consists mainly of buying for long account and short selling. Whether the price advances or declines during this period depends on the aggressiveness of the buyers or sellers. After the open commitments in a given future have reached the peak, the reverse process takes place. The nature of the trading in that future is then principally liquidation and short covering. Whether the price declines or advances, in that particular future, is determined by which of two groups, the longs or shorts, are the more anxious to close out their holdings. If the former insist on delivery, prices will undoubtedly advance sharply during the last few days of the life of the future with a possibility of a "squeeze" taking place; as was the case in the 1925 July wheat future when the high price on July 31 was nine cents over the previous close. The following year the "high" in the 1926 July future on the last day was 11¼ cents over the previous close. Normally, both longs and shorts prefer to close out their open contracts through pit transactions.

When the maximum of the open commitments of the market is unduly large, because of excessive speculation on a market in which prices had advanced rapidly, a potential danger exists especially if the accounts are weakly held. Heavy concentrated short selling or liquidation on the part of one or more large operators, after the market price has reached its peak and turned, may start the ball rolling and demoralize the market. The rate of liquidation will be increased due to selling out of weak accounts and the daily fluctuations will become wider than normal. The sharp breaks in the prices on March 13, 1925 and March 17, 1925 and on July 19 to 20, 1933 are excellent examples. The sharply falling prices are not likely to attract new buyers but induce additional selling pressure. For years there was a belief that price movements in grain were not truly in accord with the generalizations advanced by economists. The first economist to revise the theory advanced at the time was Professor Taussig of Harvard University. He pointed out that a lower price frequently does not result in an increased demand but may actually decrease the quantity that can be disposed of in a market. Neither does the decline in price necessarily reduce the quantity offered for sale. To the contrary, it may be increased. His analysis is particularly applicable to the futures market.[9]

As has been previously mentioned, buying or selling of futures may be for long or for short account. Trading in futures for short account may be either for hedgers or for speculators. Short selling by the speculator has been severely condemned by many who have believed that an individual should not have the right to sell what he did not own. The academic argument usually advanced in favor of speculative short selling is that those who sell short render a service in preventing prices from advancing too high considering the supply and demand for actual grain and thereby contribute to stabilizing market price. Let us examine the facts.

Selling for short account, hedging and speculative, has its greatest influence during that part of the life of a future when open commitments are being increased and before they reach a maximum. As the open commitments in the May future are the largest for any one wheat future, it is evident that more selling for short account would come during the life of that future than in any other. The period during which the open commitments are being acquired occurs during the months of July to December when the country marketings of grain are the heaviest. This is also the period when open commitments in all futures combined

[9] Pages 394-411 *Quarterly Journal of Economics*, May 1921.

reach their maximum for hedging pressure is then at its height. Whatever influence short selling, hedging and speculative, has in depressing prices will be felt more keenly at that time. Because of the hedging pressure that comes on to the market during that period, some speculators take advantage of the situation and sell for short account, taking advantage of the hedging pressure to cover at a profit. Buying of futures by speculators, on the other hand, may be sufficiently aggressive at that time to cause the price to advance rather than to decline. Data collected by the Grain Futures Administration show that, during five of the eight years covered by the period of 1925-1932, the combined net position of 16 large speculators in Chicago wheat futures was principally on the short side of the market during the months of July to October when country marketings were the heaviest. They were the years 1926, 1928, 1930, 1931 and 1932. During two other years, 1925 and 1929, they were mainly on the long side. In another year, 1927, the position was about as often on the long as on the short side of the market. During the growing season of April 1 to June 31, their combined net position was more frequently on the short side for five out of the eight years. They were 1926, 1927, 1929, 1931 and 1932. During three other seasons, 1925, 1928 and 1930, their combined net position was more frequently on the long side.

Short selling has always been considered to have a stabilizing influence on prices if it takes place on an advancing market, but it also contributes to producing widening of fluctuations if carried on when prices are declining.

On an advance in the price of a future followed immediately by a decline of *equal magnitude,* or vice versa, one of the following possibilities will take place:

1. The quantity of futures sold for short account (speculators and hedgers combined) will be in the aggregate greater in total volume during the period of price advance than during a period of decline.
2. The aggregate short sales may be smaller in volume on the advance than on the decline.
3. The aggregate sales for short account as the price advanced may be equal to that sold on the decline.
4. The purchases for short account may in part or entirely offset the sales for short account made on either the advance or decline.

For any given period of advance and decline of equal magnitude any one of these four possibilities realized for the market as a

whole may be different from that which took place for a particular trader or class of traders.

In order to ascertain the frequency with which the volume of short sales in a future, both aggregate and net, was greater on the advance than on the decline, or vice versa, and the extent to which the one exceeded the other, a study was made of the open commitment figures in relation to price movements of a number of wheat futures traded in on the Chicago Board of Trade from 1924 to 1929.

To determine the aggregate quantity of futures sold short for all customers on the advance and also on the decline for each of the periods studied, the net change in the open commitments for each day, comparing the contracts open at the close with that of the previous day, were totaled. Only the daily net trades could be used as the amount sold for short and bought for long account during the day, and which also offset each other, is not known as no record is kept which would reveal that information. The only figures available are the aggregate of the net change in the open commitments for the day.

With the exception of the year 1927, the data used were limited to the May wheat futures. For 1927 four major futures were used in making compilations as figures showing the trading done for the short account of various classes of traders were available.

In selecting the periods for study purpose, only those were chosen which, as near as possible, had an advance and decline of approximately equal magnitude. Although the advance and decline in price in most instances are not equal in amount, they are nevertheless very close to it. The advance and decline was based on closing prices.

The results of the study show that for the Chicago market, considering the trading of all customers as a whole, the aggregate quantity of futures sold for short account, both speculative and hedging combined, were for each of 12 periods, with price movements of equal magnitude, larger when prices advanced than when they declined. For 7 of the periods the opposite was the case. When allowance was made for the covering done by shorts the situation was somewhat different. The net short sales were found to be greater on the advances in 7 instances instead of 12 and on the decline for 6 periods, whereas with the aggregate the number was 7. For 6 other periods the aggregate amount covered on the advance or decline in price more than offset the aggregate short sales.

In a further examination of the data pertaining to short selling

and short covering the following observations were made:

(a) That when the period during which the price of the future advanced or declined occurred before the open commitments in the future for all customers combined reached its maximum, the volume of selling for short account, speculative and hedging com-

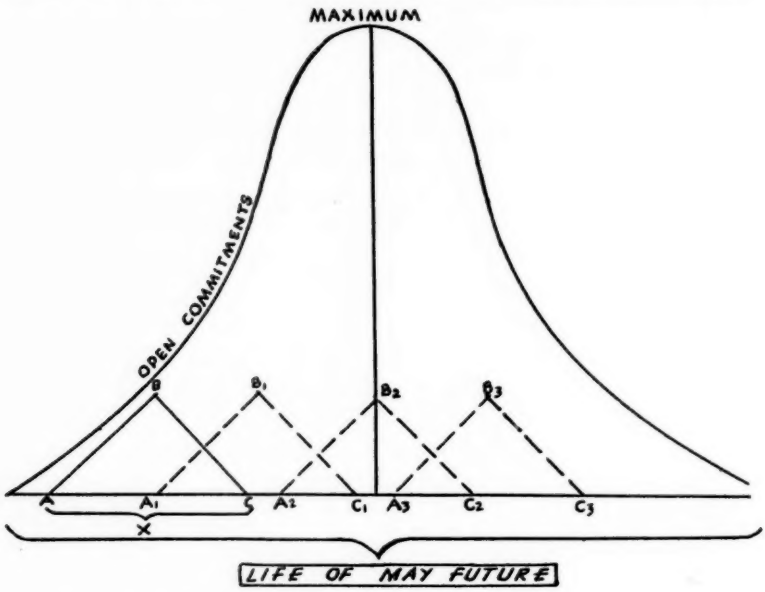

FIGURE 1.—Graphic Illustration of Short Selling and Covering.

bined, would in most cases exceed the short covering. This held true for both the period of advance and the period of decline.

(b) That as the period of advance and decline approached the date on which the maximum open commitments were reached the amount of short covering would tend more and more to offset the sales made for short account.

(c) Whenever the period of advance and decline occurred after the date the maximum open commitments were reached, the volume of short selling that took place, on both the advance and decline, would in most cases be exceeded by the short covering.

Graphically these points can be illustrated in Figure 1. For example, Triangle ABC of Figure 1 represents an advance and decline of 5 cents per bushel which took place during the period of time designated as X in the life of the May wheat future at Chicago. Based on the periods studied, the indications are that more short selling, speculative and hedging combined, will take place on the advance than on the decline. In either event the sales for

short account would exceed the covering which took place on the advance and also on the decline.

If the period of advance and decline occurred later, as shown by triangle $A_1B_1C_1$ the above would still be true. Should the advance and decline have come at a time when the open commitments reached its peak, as indicated by triangle $A_2B_2C_2$, one would be apt to find that the short covering would be nearly if not equal to the volume of short selling. Later in the life of the future, for example where the triangle, $A_3B_3C_3$, appears, the short covering on the advance and the decline would exceed the selling for short account.

What is true of short selling and short covering is in its converse also true of buying for long account and of liquidation. Taking the market as a whole and for a period of time, the influence of the former, buying for long account, is felt more markedly before the open commitments of a given future have reached their maximum. In the case of the selling or liquidation of holdings the effect is felt the most after the peak has been reached.

With the exception of the May future, the period during which the volume of short selling exceeds the short covering is longer than the period during which liquidation exceeds the new buying. This is due to the fact that the time that elapses during the life of the future before the date the open commitments in the July, September and December futures reach their maximum, is considerably longer than that which remains after the peak was made and during which contracts are liquidated and covered.

For the larger hedgers, considered as a class, the aggregate short sales at Chicago were, for seven periods, for which data were available, greater on the decline than on the advance in price. In no case was the aggregate of the short sales greater on the advance in price. When allowance is made for the short covering done during the seven periods, the picture is radically changed. The net short sales for the hedgers are then found to be principally on the advance. This was true in four instances as compared with one when the net short sales were larger on the decline. During two other periods the short covering offset or was greater in volume than the short sales on both the advance and the decline.

The small traders, taken as a class, comprising those whose open commitments or trading on any one day never reached 200,000 bushels in a single wheat future at Chicago, had short sales which in the aggregate and in the net were, for all but one of the periods, greater on the advance than on the decline in price.

The net short sales were greater on the advance for four and on the decline for two periods. This shows that the smaller speculators tend to do most of their short selling as prices advance.

The aggregate short sales of those speculators whose trading was larger than that of the small trader, as a class, were greater on the decline in price for eight and on the advance for four periods, the former being twice as numerous as the latter. The net short sales were the larger for seven periods of declines and three of advances. This shows that these speculators do most of their short selling after the price has reached its peak.

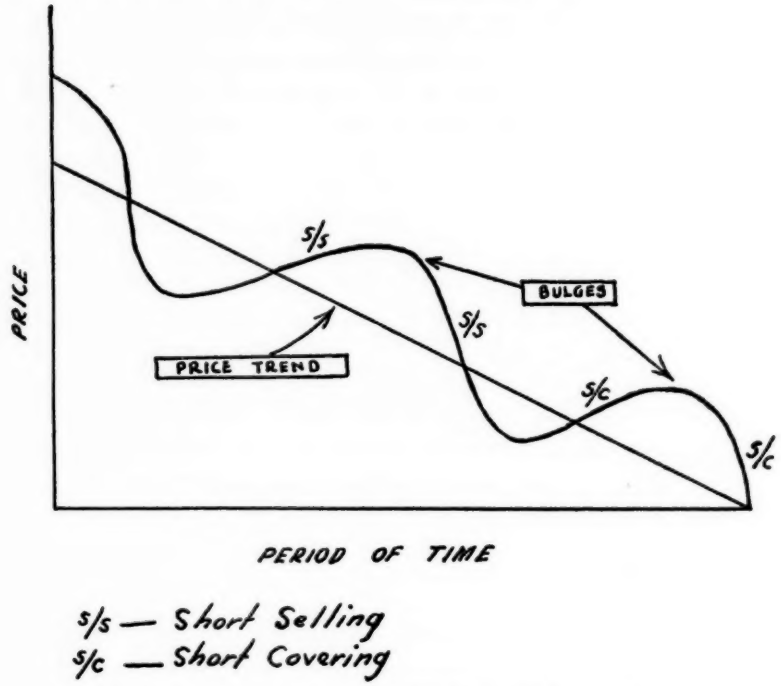

FIGURE 2.—Illustration of Trading on a Declining Market.

In considering the extent to which the large speculators, as individuals, do their short selling or short covering on advancing or declining markets, in which the price change is not of equal magnitude, the element of time must be taken into account as prices move in one direction for but a relatively few days. For example, during a given period the major price trend may be downward and yet there are usually a number of minor periods in which the price reacts and advances only to decline again. Such periods are known as "bulges" and they also occur when the long-time trend is upward. With a major price trend which is

downward, it often happens that a trader will sell futures for short account on the declining side of one bulge and cover his open short commitments on the advancing side of a succeeding bulge. Therefore, considered from the long-time period, it could be stated that the trader sold short and covered on a declining market. On the other hand, when reviewing his trading from the short-time standpoint, it could be said that he sold for short account on a declining market and covered on an advance. When a large line is being built up by a large operator, the selling and the covering may cover considerable time and, consequently, both the selling and the buying may have been done on a declining and on an advancing market, with the major price trend being downward as is illustrated in figure 2.

In ascertaining what the practice of sixteen large speculators, included in another study covering the period of April 1, 1925 to October 22, 1932, was with respect to short selling and short covering, the following method was used in determining whether the trading took place on a declining or advancing market.

Observations were made as to the general movement in the price of the future during the period when the short line was being built up, i.e., from the time the first sale was reported until the peak of the open commitments was reached. In the case of short covering, the price movement that took place after the line had reached its maximum was observed and recorded. Any short covering that occurred before the line reached its peak was disregarded. Likewise, any short selling that took place after the line had reached its maximum was also not taken into consideration. Short lines of less than one million bushels were not included in the study.

On the basis stated, it was found that in 97 out of 147, or 66 per cent of the lines of a million bushels or over in a single future held by various traders comprising the 16 speculators, the short selling took place principally on a declining market, and 40 or 27 per cent on an advancing market. The remaining 10 lines were acquired by selling for short account which occurred when the market changed its general trend part of the time advancing and part declining or when the price movement was sideways.

When short covering, it was found that 73 or almost 50 per cent were covered when prices, for the most part, were declining, and 59 or 40 per cent when prices were advancing. The remaining 15 lines were covered during periods when the trend was partly upward and partly downward or when the price movement was sideways.

The net effect that the trading of any group of individuals or

single persons has on prices cannot always be determined with mathematical exactness for a given period of time. It has already been shown that as trading in futures at Chicago increases in volume the price range tends to widen. The reason it does not widen still further is because of the opposition which is encountered. If the trading is heavy and concentrated, however, the opposition must become stronger to resist a change in price. If the combined trading of a group of speculators is heavy and concentrated, it will be reflected in the price movement. Trading of this character usually results in a change in the open commitments of the group of large speculators. Should the movement of the net position of the group, however, be closely and positively related to that of the movement in the prices of the dominant future from day to day, in contrast to a lack of relationship or an inverse relationship for other groups, it is evident that the trading of the former group was, in a large measure, directly responsible for the change in price.

By sub-dividing the groups into smaller units, one frequently finds that the changes in the net position curve of the group are dominated by that of a relatively few persons. Thus by the method of deduction it can be determined whether or not certain groups or individuals were primarily responsible for sudden wide fluctuations in the price of futures. If a sharp change in price occurs on a single day, it is comparatively easy to discover who was responsible for the heavy concentrated selling or buying which produced the wide fluctuations. This is clearly illustrated in figure 8, opposite page 36 of the United States Department of Agriculture bulletin 1479, which shows how, on March 1, 1926, the heavy selling totaling 6 million bushels by one large speculator accompanied by additional selling amounting to 4 million bushels by a second trader resulted in a 6 7/8 cents decline in the price of the 1926 May future, between the opening and closing of the market at Chicago on that day.

It is not necessary to know what induced the selling or buying of futures to show its effect on price. Any of a large number of factors may have induced the trading. The shorter the period of time studied, the more difficult it is to assign a motive. For example, the technical position of the market, the calling of bank loans, the closing out of commitments in grain which show a profit to protect commitments made in other commodities or in stocks may have prompted the trading of an individual on a given day and influenced intraday price movements. Over a long period, however, changes affecting the supply and demand for grain,

money inflation and changes in other fundamental factors will have dominated the movement of prices. Price movements over a long period of time are made up of the day to day changes, and it is the latter that must receive the greater attention if wide fluctuations, not reflecting changes in fundamental conditions, are to be not only explained but checked. Any attempt made to prevent wide fluctuations necessarily must result in limiting the activities of speculators. By placing a limitation on the size of holdings of a speculator and thereby limiting the amount of trading that he may do on a single day, it is believed that greater market stability will result. This, it is expected, will prove beneficial to producers as well as merchandisers of grain and its products.

THE SOCIAL SCIENCE FELLOWSHIPS IN AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

I. G. Davis
Connecticut State College

At the 1927 meeting of the American Farm Economic Association, Dr. Henry C. Taylor presented a paper on the status of research in agricultural economics in the United States. Dr. Taylor pointed out in this paper, and more strongly in the extemporaneous discussion of the meeting, the weaknesses of research work and the limitations of research workers in this field, and stated that the "Committee on Economics and Social Research in Agriculture felt so keenly the importance of this matter that they recommended to the Social Science Research Council that a number of fellowships be provided for the specific purpose of stimulating graduate work on the part of research workers in agricultural economics and rural sociology."

The outcome of this recommendation was an appropriation of a sum of $150,000 by the Social Science Research Council and the constitution of a committee of five to administer the fund under the auspices of the Council. The original committee consisted of Dr. E. G. Nourse, Chairman; Dr. Joseph S. Davis of the Food Research Institute, Stanford University; Dr. Frank A. Fetter, Princeton University; Dr. C. J. Galpin, United States Bureau of Agricultural Economics; Dr. W. J. Spillman, United States Bureau of Agricultural Economics; and Mr. Henry A. Wallace of *Wallace's Farmer,* now Secretary of Agriculture.

After three years of service, Dr. Davis resigned to be succeeded by Professor I. G. Davis of the Connecticut State College. The following year the chairman Dr. E. G. Nourse resigned and was succeeded in the chairmanship by Professor Davis. The resignation of Dr. Galpin and the death of Dr. Spillman led to the appointments of Dr. J. H. Kolb of the University of Wisconsin, Professor H. R. Tolley of the University of California and Dr. C. L. Holmes of the United States Bureau of Agricultural Economics. The committee as thus constituted served until the termination of its work.

The principles which guided the committee in the selection of appointees are in general known to agricultural economists and rural sociologists. Awards were made to men of proven ability but inadequate training, or to younger men of exceptional promise. In the early years of the committee's work an effort was made to strengthen the education of certain key men who were the es-

tablished research workers or leaders of research in their institutions. Later an increasing number of appointments of young men of promise were made, but some appointments continued to be made on the ground that the appointees were key men whose further education was essential to progress of research in some field or area. The general policies laid down by the committee during its early years under the chairmanship of Dr. Nourse were followed throughout the history of the committee.

Awards were made for purposes of completing the graduate training and education of prospective researchers. Petitions for grants to conduct research, to complete theses or to travel were consistently denied. In the majority of cases grants were made to

TABLE 1. GEOGRAPHICAL DISTRIBUTION OF FELLOWSHIP APPOINTEES, STATES FROM WHICH THEY WERE APPOINTED AND WERE SERVING IN OCTOBER, 1933

1. Northern States			2. Southern States			3. Western States		
	Appointed from	On Service in 1933		Appointed from	On Service in 1933		Appointed from	On Service in 1933
New England			*South Atlantic*			*Mountain Division*		
Maine		1	Delaware			Montana	4	2
New Hampshire	1	1	Maryland			Idaho		
Vermont	2	1	D. Columbia	16	23*	Wyoming	1	
Massachusetts	3	3	Virginia	2	3	Colorado	2	1
Rhode Island			W. Virginia	1		New Mexico	1	1
Connecticut	3	3	North Carolina	3	1	Arizona		
			South Carolina	2	2	Utah		
Middle Atlantic			Georgia			Nevada		
New York	6	7	Florida	1	1			
New Jersey	2	1						
Pennsylvania			*E. South Central*			*Pacific*		
			Kentucky	4	3	Washington		1
East North Central			Tennessee	1	1	Oregon		
Ohio	3	4	Alabama	2	1	California	5	5
Indiana			Mississippi					
Illinois	4	7						
Michigan			*W. South Central*			*Canada*		
Wisconsin	9	5	Arkansas	1	1	Winnipeg	1	1
			Louisiana	1	3			
West North Central			Oklahoma					
Minnesota	8	1	Texas	2	2	*Foreign*		
Iowa	6	4				Jugoslavia		1
Missouri	1					Germany		1
North Dakota	2	1						
South Dakota	1	3				Unknown or no position		5
Nebraska	2	2						
Kansas	3	3					106	106

SUMMARY

	Appointed from	On Service in 1933		Appointed from	On Service in 1933
New England	9	9	West South Central	4	6
Middle Atlantic	8	8	Mountain Division	8	4
East North Central	16	16	Pacific	5	6
West North Central	23	14	Canada	1	1
South Atlantic	9	7	Foreign		2
East South Central	7	5	Unknown		5
District of Columbia	16	23*			

* Since October 18 additional fellowship men have transferred to work in Washington either permanently or on leave of absence.

applicants desiring to complete a second or final year of graduate training prior to work on a thesis. In a large number of cases grants were made to individuals in established positions who were able to secure a leave of absence for study.

In the selection of fellows an effort was made, as far as consistent with selecting the ablest and more promising men, to secure an even geographical distribution of awards. In some years this problem was more difficult than in others. The level of preparation was much higher in some sections and institutions than in others, and in general the institutions having the stronger departments in the social sciences had tended to attract the stronger students and faculty. The results achieved as far as geographical distribution is concerned are indicated by the following table.

From the beginning applicants limited their plans for study to a few better staffed and organized graduate schools. In choosing appointees, little consideration was given to the applicant's choice of university, but emphasis was directed very largely to his ability, promise and the service which his training might render to the development of research in the rural social sciences in the United States.

The following table shows the choice of universities of the several applicants who received awards during the period of the committee's existence.

TABLE 2. NUMBER OF FELLOWS APPOINTED TO EACH OF SEVERAL UNIVERSITIES

	Washington, D.C.*	California	Chicago	Columbia	Cornell	Harvard	Minnesota	North Western	Stanford	Wisconsin	Foreign	Total
1928–29			1	2	3	7	2			1	1	17**
1929–30		1	2½	2	2½	9	3½		1	2½		24
1930–31		1	1	2½	3½	8	2			4		22
1931–32			1	1	2	13	1	1		1		20
1932–33	1	4	1		4	9	1			2		22
Total	1	6	6½	7½	15	46	9½	1	1	10½	1	105

* Graduate courses in Agricultural Economics maintained by the Social Science Research Council
** One case missing.

In October 1933, seventy-one of the 106 appointees were serving the institutions where they resided at the time of the original appointment.[1] Twenty-seven of the seventy-one had received promotions of grade.

Of the original appointees, 18 held the rank of professor or its

[1] Between October 1933, and April 1934, eighteen appointees transferred to service in Washington, D.C., to positions connected with the federal service or related private employment.

equivalent in the government service at the time of appointment. Twenty-nine held this rank in 1933. Twelve held the grade of associate professor at the time of appointment and 23 held this grade in the summer of 1933. Forty-three held the grade of assistant professor or its equivalent in the governmental service at the time of appointment and twenty-nine held this grade in the summer of 1933. Twelve held the rank of instructor at the time of appointment and six returned to this rank. Nineteen were listed as graduate students when they received their appointments and eight were so listed in 1933. Two appointees held business positions in the research line when they accepted their fellowships and in 1933, two were again listed as being in business. Two held foreign positions in 1933 and information is lacking on five men in 1933.

In general the appointments from the institutions of higher grade were from the lower ranks or from graduate students, while the appointments from the smaller institutions and the areas where the college work in the social sciences was less well developed were from the higher grades of rank.

Both rural sociology and agricultural economics were represented on the committee. In general it was anticipated in laying out the policy of the committee that somewhat less than a third of the total appointees would probably be from the field of rural sociology. While a real effort was made to attain this proportion, in some years it was found difficult because of the relative scarcity of qualified applicants from rural sociology. The committee does not feel satisfied with the number of appointments made from this field, but believes that it could not wisely have increased this number.

TABLE 3. DISTRIBUTION OF FELLOWSHIPS BY YEARS, 1928–1933

	1928–29	1929–30	1930–31	1931–32	1932–33	Total
Agricultural Economics	13	19½	17	17	16	82½
Rural Sociology	5	4½	5	3	6	23½
Total	18	24	22	20	22	106

In October 1933 letters were directed to the heads of departments of agricultural economics and rural sociology, to directors of experiment stations, to prominent persons in rural social sciences in the governmental service and to a few others. The letters asked for opinions as to the values, both social and professional, arising from the five years' experience in the granting of fellowships in agricultural economics and rural sociology by the So-

cial Science Research Council; for criticisms of the policies and methods of the Committee; and for constructive suggestions both as to the nature of the need for similar funds in the future and as to the policies that should be employed for their administration.

In April 1934 a second letter was addressed to a portion of the same list requesting opinion as to whether a shortage of agricultural economists existed and as to the nature of the demand likely to exist for the next few years. The replies indicated a very general belief that the results obtained had amply justified the expenditure. The testimony was quite unanimous that the men who had received awards had not only acquired an understanding of theory and method which had resulted in more effective research method and procedure, but that they had developed a firmer grasp and broader conception of research problems. The Social Science fellowships in agricultural economics and rural sociology, as is suggested by one correspondent, not only resulted in the more thorough training of men and women, but served to stimulate advanced study by many others and helped set new and higher standards for professional training in these fields. The administrators whose staff members have been recipients of fellowships were in unanimous agreement that the work of these men has been improved and their value to agriculture and their fields has markedly increased as a result of the additional professional training received.

A note of regret appears in the replies of a number of administrators in institutions to whose staff members no awards were made. This appears most frequently in the southern states.

Most of the replies to the April letter testify to a present shortage of men in the social sciences, especially in agricultural economics. The staffs of many of the state institutions are at present seriously depleted of their abler men. The future both of teaching and research may be seriously endangered by this condition. Only two states report no shortage in the supply of men. A note of extreme caution, however, characterizes most of the expressions of opinion relating to the future demand for men in these fields, and a number of the correspondents express doubts as to the continuance of the present increasing demand and as to the permanence of various governmental relief and reconstruction agencies being set up.

In attempting to estimate the future demand, it seems reasonable to take into account two factors. First, the sharp increase in demand for men created by the setting up of projects under the "New Deal" will diminish, and a greater or less reduction in the

rate of increase in these projects may be expected after a peak has been reached in the near future. It is even possible, of course, that such violent readjustments may occur as to cause the abandonment of many or most of the projects already adopted. Second, there is a gradually growing popular recognition of the value of services of properly trained agricultural economists and rural sociologists. The secular trend of demand for men in this field is undoubtedly upward. Rural social scientists will undoubtedly be called upon to perform an increasing number of important and often specialized services as public administrators or executives. It seems likely, moreover, that there will be an expanding demand for persons qualified to do the spade work of the social sciences, that is, competent field observers, statisticians, and persons able to do qualitative work of a semi-routine nature. O. R. Johnson of Missouri suggests that most of the work of county agents for some time to come will be largely economic in nature. Such positions as those of county agents, extension workers, market reporters and agricultural publicists may come to be filled in considerable proportion by men trained to interpret social data and make sound economic and social analysis of an elementary type. A much larger body of men competent to use results of social research and qualified to criticize its methods intelligently is thus being gradually created. This body of men will eventually include a considerable portion of the general public. Not only does the need exist for much better trained research men than has existed in the past, but the criteria of public judgment and criticism are likely to be on an increasingly higher plane and the users of research results less tolerant of anything except work of the highest quality.

The events of the past year have demonstrated that in periods of emergency it is from the body of research workers that administrators and advisers are recruited. They alone oftentimes possess the detailed accurate and timely knowledge necessary to grapple successfully with important problems. While the transfer of such men weakens research, it constitutes its strongest justification. Oftentimes the knowledge and understanding of the researcher can be applied only by himself.

A qualified and able working research organization of ordinary times is available for sound planning and administration in periods of emergency. Through the research worker as an administrator or adviser and through him alone can some of the most important results of research be applied in the realms either of private or public affairs.

Some of the research men who have transferred to administrative or advisory positions in this emergency will continue to remain in these or other such positions. Such a movement if it does not occur too rapidly is desirable, and in normal times a gradual movement of this kind is likely to occur and tends to help accomplish the purposes of research. The suggestion of Professor Jesness that the new developments in credit and land utilization are likely to be permanent appears to be well founded. Some of the other developments probably will be modified, but a reasonable expectation is that they will be continued in some form and on a considerable scale.

In view of this constant normal depletion of research personnel the necessity for its continuous replacement always exists. In a period like the present the sharpness of the need is intensified. The situation is mitigated somewhat by the reduced budgets of many research organizations and of experiment stations, but only temporarily.

The need is for men of the highest quality. Dr. Grimes says in his letter: "There is an urgent need of real ability, trained in the fundamentals of agricultural economics and rural sociology." We cannot emphasize too strongly the importance of a broad basic training in all the social sciences as well as in certain fundamentals of agriculture as a basis for graduate work in these fields. While admitting the necessity for statistical training of the highest quality, graduate work should emphasize theoretical and historical work and include critical qualitative analysis under the ablest teachers. As Dr. Zimmerman points out, an increase in quality will eventually increase demand and by the same token, rewards.

The committee feels that the need still exists for fellowship funds in the fields of agricultural economics and rural sociology. As suggested by the foregoing discussion, such funds should be utilized for the education of men of the highest personal quality and promise for research. The committee further feels that all possible effort should be given to recruiting promising undergraduates and first year graduate students for research. In a small college an outstanding man likely to make a first class research worker in a particular field may not turn up more than once in three or four years. A larger number appear who, if properly trained, will do good research work of certain simpler types; but ordinary training facilities normally take care of such men. Even for these men, however, as Professor Weaver points out, "the greatest need is for some way to bridge the gap from under-

graduate training to the point where they have one or two years' experience in the elementary methods of research." A number of correspondents, including Professor Young of Virginia Polytechnic Institute and Professor Sanders of Oklahoma indicate that the graduate assistantships of various departments ordinarily offer such an opportunity, but that financial stringency has eliminated many of these.

All too often it happens that graduate assistantships are filled with mediocre men. No method exists in fact by which departments can get the best men the country affords for such positions except by comprehensive and time-consuming efforts. The committee has considered whether or not it might be wise if some central committee were to maintain a list of the most promising undergraduate seniors and graduate students in American institutions who are desirous of obtaining financial assistance for perfecting their training for rural social science research. Such a list should be selective, and scholastic records, research manuscripts and references of persons kept on file and available to any institutions wishing to consult them. Colleges and universities having persons eligible for such a list could be invited to make nominations for it and to consult this list in granting fellowships or selecting assistants. This proposal is in line with Dr. Galpin's suggestion that a watch be set in the colleges for undergraduates who have high and special quality for research. Such a watch need not be confined to the land grant colleges.

SOME SOCIOLOGICAL IMPLICATIONS OF THE AGRICULTURAL ADJUSTMENT PROGRAM[1]

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As an approach to this discussion, a few preliminary remarks seem to be in order. In the first place, it will be impossible even to enumerate all the sociological aspects of the national program for agricultural recovery. It is doubtful if anyone knows the full extent to which this move on the part of the federal government ultimately may be felt upon the social life of the agricultural population. Second, in view of the inherent complexity of the problems certain to be encountered in the rehabilitation of the nation's greatest single industry, only two or three points of contact between the program and the social behavior of farmers will be given any attention whatever. Third, there is no presumption on the part of the writer that the issues to be raised will be treated with precision. Obviously, the implications involved are far too numerous and evasive in character to admit of adequate interpretation at this early stage by anyone not possessing a prophetic vision, however great may be his interest in the matter.

Recognizing the limitations imposed by a lack of adequate knowledge, an attempt will be made to point out some of the probable implications of the agricultural adjustment plan with reference to: (1) the farm population, (2) problems which may be raised in regard to rural social agencies, especially the church, the school, and poor relief, and (3) the farmer's standard of living. In reality each of these topics is of sufficient importance to engage the full time of a three-day conference without any consideration of other questions which vex the minds of farmers and agricultural leaders at the present time. The magnitude of such a task as this seems to increase in geometrical progression as one attempts to comprehend it in terms of facts, reason, or simple logic.

Galpin and Manny have estimated that between 1920 and 1929 the farms of this country lost around 628,900 people annually in the exchange of migrants with cities which went on at a high rate during that period. On this basis, it has been calculated that the farms lost approximately six and one quarter millions of people during the last ten years prior to the general depression. However, the census shows that the actual decline in farm population

[1] This paper was read in the Agricultural Economics Division of the 35th Annual Meeting of the Association of Southern Agricultural Workers, Memphis, January 31, 1934.

was from 31,614,269 to 30,447,229 or a total of only 1,167,040 from 1920 to 1930. If the estimates of Galpin and Manny are indicative of the migratory movements of the farm population, what the census figures mean is that the natural increase was sufficient to offset 81 per cent of the population depletion resulting from the rural exodus. In 1930, the excess of rural-urban migration was in the direction of the farms, and the landward movement has continued up to 1933. In some areas, the Southwest in particular, the farms had begun to attract more migrants than they lost in the annual exchange of population with the cities as early as 1927 or 1928. Although Dr. Galpin reported a few months ago in a radio address that the movement of population had begun to slow down, both toward and away from the land, it is believed that there are at least two or possibly three million more people now on farms than in 1929-30. These people have gone to the farms as a place of refuge from starvation induced by the depression. Furthermore, the mechanization of agricultural production, which is now in only an early stage of development, has been an important factor in creating a surplus of farm labor for a generation. In other words, there seems to be irrefutable evidence that we had an increased surplus of farm population before the Agricultural Adjustment Administration program was inaugurated.

Now that an attempt is being made to engineer the future of agriculture by means of predetermined measures and hypothetical gauges, it is proposed to take an enormous acreage of farm land out of production. On Saturday night, January 20, 1934, Secretary of Agriculture Henry A. Wallace and Assistant Secretary Rexford G. Tugwell stated in a radio discussion that 43,000,000 acres of crop land would be taken out of commercial agriculture. Other reports have it that the reduction will amount to 50,000,000 acres. Ostensibly the purpose of this crop acreage reduction program is to forestall further increases in the present surpluses of farm products. Dividing the smaller estimate by 55, the average number of acres in a Mississippi farm, this will mean a minimum reduction of the equivalent of 718,818 farms, or a liberation of the labor of 3,909,090 farm people. On the other hand, there is the proposal to settle some 6,000,000 more people from cities and towns on farms. Altogether, counting the two million people who returned to farms before the adjustment program came into being, the 3.9 million whose labor will not be needed on farms as a result of the prospective restrictions, and the six million more people yet to be placed on the land, there will be in round numbers 12 million more people on the farms than

will be needed to produce the nation's food not allowing anything for the extension of machine methods in agricultural production. This, of course, is assuming a great many things, but it is not out of line with conservative calculations based upon proposals of prominent national leaders, both official and otherwise. If vital processes among the farm population could be brought to rest, it would require more than a decade similar to that from 1920 to 1929, for the cities again to absorb the surplus of farm population with which we are about to be burdened. Do not the prospects of such a colossal re-ruralization of the urban population as this at least carry the intimation that industry has admitted its own defeat through its own schemes, which were brought into fructification during the past generation? To the writer an affirmative reply seems to be the only possible deduction.

What is proposed for the human surplus to be released from agriculture? Presumably, they will be able to take care of themselves. What is to be done with the six to eight millions who will either return of their own volition or be returned to farms by special inducements? The assumption is that they are to be placed on subsistence farms where they can live without adding to the farmer's surpluses. To be sure, this will not be done in a day, but if it is to be accomplished within five or ten years it is a problem of astronomical dimensions of the first order. Rightly interpreted, a redistribution of a nation's population on a geographic basis is a process of evolution requiring a long period for both the physical movements and the socio-economic assimilation which would be necessary. The writer would request from a generation to a century as the minimum time in which to perform such a task, if it should be assigned him.

One may wonder if, on the basis of man to land factors only, it would be possible to assimilate on our farms from eight to twelve millions more people than were there in 1929. The answer must be an affirmative. If by exercising a rigid national land settlement policy, and if the average size of farms in Oklahoma and Texas alone were reduced to 55 acres, which is typical of Mississippi these two states could afford farms for the support of 12,847,639, compared with the 3,353,727 farm population which they had in 1930. It would be mathematically possible on the basis of the amount of land in farms in this country in 1930 to provide 17,950,382 farmers each with a farm of 55 acres in size. This would take care of 89,751,915 farm people as compared with 30,447,229 which we had in 1930.

Incidentally, it may be added that in periods of national decay

or regeneration, a re-ruralization of the population is not an unfamiliar phenomenon. Such a thing has happened in such ancient societies as Babylon, Egypt, Tyre, Sidon, the Greek City States, Rome, and elsewhere. If, indeed, men learn the lessons of history, which they often do not, a return of millions of people from the cities to the country conceivably may be an expedient which we shall be forced to adopt in desperation, before national recovery can be achieved wholly. Such a turn of events would mean that American civilization had turned into a Frankenstein monster and devoured its builders. To put it mildly it would be the white flag of surrender. When this is done, a new social and economic order will have been set up already—a revolution passed and another era of trial and error instituted. So much for the quantitative phases of population movements as related to the Agricultural Adjustment Administration program.

From the viewpoint of quality, it is impossible to say what may be the result of the adjustment plan upon the population. Already, as the writer has recently shown in another study based on census data for the entire United States, there are far more males on farms than is consistent with any predictable requirement of the farm population. In fact, the superabundance of males in the farm population is a major factor in keeping the natural increase in agricultural areas within limits at all proportionate to actual population requirements. But what about the people going to farms now? Are they old, young, married, widowed, divorced or single? Are they male or female? Have they any resources upon which to start farming? Are they illiterate, or have they been educated? Do they expect to stay permanently or for just a short time? An indefinite number of questions like these may be asked, but to all of them the answer must be, "We do not know, and could not safely guess." It is lamentable that up to the present time no serious study of these problems has been undertaken either by agricultural leaders or population students of any kind. The mass or size of the population has been our principal concern all the time. China is a good example of a country which regards numbers of people as being of more importance than quality. Who would want to see American farmers reduced to the economic levels of Chinese peasants? Perhaps we may be awakened to the significance of the kinds of people we are trying to place on our farms before it is everlastingly too late, though it now seems doubtful.

Thus far, the only direct implication of the agricultural adjustment program that has as much as a shadow of reality is related

to quantity. By inference, partly from the Agricultural Adjustment Administration's plans, but mostly from the New Deal in its general applications, we learn that it is the unemployed, the down-and-outs, the inert, those who never succeeded in cities, the total social and economic bankrupts, those who can do nothing else as well as those whose technologies are obsolete, who are to go on the hegira to the land. In the face of a proposal of this kind, nearly everyone seems to be complacently at ease just now. Perhaps our inertia in this case arises from an instinctive dislike on the part of mankind generally for meeting unpleasant facts squarely and having to dispose of them in open encounter.

This landward movement presents a pressing demand for comprehensive study. We talk simultaneously of marginal land and marginal people. First we say that we should get rid of both, then we propose to marry them to each other. Again some one will say that the marginal land must be abandoned, leaving the listener to infer that to put out sub-marginal people on super-marginal land would mend things satisfactorily. But we forget that almost any man and about any land may be marginal or below margin at one time and super-marginal at another, depending upon circumstances. There is plenty of land in this country that is too poor to produce bricks without the application of fertilizer. Certainly for farming purposes this is submarginal land. On the other hand, some of the best cotton lands of the United States have been submarginal for several years past. If there is any point to these remarks, it is that we have grown into a careless habit of referring to land and people as marginal at any time when we find them to be a problem. Terminology in this case has got the better part of reason and has become mostly a vulgar *Schlagwort* for the concealment of intellectual sterility. It would be a boon to mankind if "marginal" could be abolished by law.

While it is true that the text of the original Roosevelt agricultural relief bill does not contain any direct implications regarding either of the main issues involved in this discussion, it is common knowledge that beneath the surface all of them together form the ultimate objectives of the law. Controlling surpluses, regaining markets, and raising prices and purchasing power are the immediate steps to be accomplished toward a general improvement of the lot of agriculture. Even if the law itself had no intentions of affecting farm population, rural institutions and standards of living, it could not achieve one of its least important purposes without exerting a profound influence upon these problems.

The plight of rural education in the United States is too well known to require proof. Terms are short, and in many places schools are closed, and in nearly all areas attendance is irregular. On the whole teachers are relatively inexperienced, inadequately trained and poorly paid. School units are so small in many cases as to make it impossible for them to function acceptably at costs that are not prohibitive for farm people. In more than half of the rural schools, there are now fewer children than a standard teaching load for teachers. On the other hand, specialization and departmentalization of instruction have increased the number of classes that must be held beyond the limits of efficiency of even the better teachers. In the South the dual school systems which must be maintained have made a bad economic situation with respect to schools worse than that which obtains for the nation as a whole. Without the demoralizing effects of the depression the rural school situation is deplorable in view of the general rate of advancement which has taken place along other lines.

Now that the federal government proposes to put another six million people on farms, what will be the effects of this transfer of population upon the rural schools? First, there will be an increase in the enrollment of children in the country schools. Second, the problem of transportation will become more intensified in areas where children are conveyed from the open country to the school center. Third, school facilities, which are too often inadequate in spite of the smallness of numbers of pupils, will not be sufficient to accommodate the increased enrollments to an advantage. Fourth, heterogeneous cultural elements will be introduced into the rural school which will be hard to assimilate. Social attitudes will be shaken and the traditional stability of the farm community may appear to break down for a while. Fifth, the addition of somewhere around twenty per cent more impoverished families to the farm community cannot be expected to increase the revenues of schools in proportion to the work load which they may add to them. It is true that the increased burden to teachers should not be great enough to impair the quality of instruction, but the costs involved will accrue to housing space, desks, apparatus, libaries, transportation and play-ground equipment. It is the overhead expenses of school operation or the fixed charges, rather than teachers' salaries, which may be expected to bring an added burden to the taxpayer. The net result of this movement cannot be calculated to improve the conditions of the rural schools unless some form of weak school aid which does not now exist can be found.

The rural church situation can be made little worse than it now

is, come what may. The little brown church in the vale exists only in the old time country spirituals which are sung over the radio on Sunday mornings before most of us get out of bed. Rural sociologists everywhere are in agreement with Dr. Carl C. Taylor that the country church of a few decades ago belongs among the memories of the past. In some counties of the United States more than half of the farmers who are church members attend city or town churches, help support their welfare organizations, patronize their church suppers, and pay their money to build the impressive edifices to which Chamber of Commerce boosters and real estate men point with enthusiasm when trying to attract new citizens. On the other side of the picture a little wooden church in the open country which has not become a winter resort for bats and owls is a twentieth century miracle.

What can the average desiccated country church offer the refugees from cities by way of spiritual rehabilitation? And, what will the pumping of millions of disheartened, browbeaten, low-spirited people on the verge of starvation onto the land add to the country church by way of rejuvenation? The answer, it seems, to both these questions is precisely nothing. One of the miraculous proofs which Jesus Christ gave of his ministry was that the poor of that day had the gospel preached to them. If that was a miracle two thousand years ago which was at a par with restoring sight to the blind, hearing to the deaf, the ability to walk to the lame, and the cleansing of lepers, today it would be more startling than if a freakish caprice of nature should reverse the law of gravitation. The overtures of the church are addressed primarily to those who can pour money into its coffers. The poor have been abandoned to fate, and ministers of the gospel by the score are begging for Civil Works Administration work in every locality. No effective effort has been exerted to save the rural church from oblivion for a long time. This is not cynicism, but actual observation based upon experience and contacts, which anyone can verify with a little effort. So far, the rural church situation is a detail in our national life which has not been covered by either a code or a contract.

Only a brief reference to poor relief is necessary. One of the first effects of the agricultural adjustment program in its various ramifications will be to lighten the relief load in the cities. If from six to eight million people who are members of families in which the bread winner is unemployed retire from the cities to the land, it is obvious that the cities themselves will be able to transfer a large share of their relief work to the rural population. The farmer will suffer from this in two ways, first, by a decreased

demand for his food products in the city, and second, by being forced to see to it that his newly arrived neighbors do not suffer for want of the necessities of life. The only means of escape open to the farmers is continual urging that the federal government become a permanent Santa Claus in the hope that the cities will be forced to help bear the load they are now trying to shift from their own to the shoulders of the country people. Nothing is more certain than that the people who are fleeing from the cities will be unable to grow as much as a garden without assistance from someone. The government is the only agency which is capable of assuming the responsibility for the solution of this vexing problem.

How will the agricultural adjustment program affect the farmers' standard of living? An indefinite amount of time and space could be consumed in debating this topic alone. But even then only a few superficial observations would be possible. Perhaps the question may be approached best by raising several others.

Does it seem reasonable that the penetration of six to eight millions more people into agriculture can be accomplished without affecting the farmers' standard of living as some writers and speakers have maintained? Does it seem possible that this can result in an improvement of farm living conditions as others seem to believe? Does it not appear that the food and other raw materials which these people will produce, either directly or indirectly, will enter into competition with the surpluses of farm products now struggling for an entrance into an already flooded market? In any case, does it not seem likely that although the refugees from cities become self-sufficing farmers, the consumers' market for farm products will be reduced by the extent to which these people grow their own foods? Furthermore, does it not seem plausible that the addition of hordes of city people to the already super-abundant supply of farm labor will further reduce wages on farms? Does it not seem inescapable that the bulk of these migrants, once they are consigned to a self-sufficing system of farming, will have been relegated to the poor house for life? Has the magnanimity of "Americanism" shriveled to such a point that we regard subsistence as the hope of our farm population of the future, the best to which they may aspire? To all these questions, and perhaps many others that may be raised, a pessimistic answer seems to the writer to be inevitable. The government may have some good luck charm hidden up its coat sleeve that we do not know anything about. This is the only hope we can entertain at this time.

There are many other ways in which farm standards of living

may be affected. The addition of more insolvent families to the farm population will undoubtedly lower the average per capita wealth of all farm people. Many of these semi-starved people have been forced to forego health care. In years to come we may expect an unfavorable trend in morbidity rates among the farm population. A large proportion of the migrants are certain to prove to be misfits in agriculture, even as subsistence farmers. As a result, there will be an increasing danger of discontent among the farm population. Agrarian unrest will probably become more intense and radicalism may be expected to grow in strength in the rural sections. Economic dependency may tend to increase, and we may drift toward a form of feudalistic peonage in the future. More credit corporations, both public and private, will have to be formed, and we may expect to see further relative declines in the equities which the farm population have in their holdings. The number of bosses of farmers will increase, bureaucratic controls will multiply, and the tax burden is bound to grow, rather than diminish in size. It is true that taxes on property may be lowered, but consumption and nuisance taxes will be forced to expand in both the number of articles taxed and the amount of taxes paid on each purchase. There is no prospect of actual lowering of taxes, but only of shifting the incidence of the taxes from land and capital to food and other necessities of life.

In the entire recovery scheme, there is one ray of hope. That is the monetary policy which has been adopted. Call it inflation, reflation, call it rubber dollars, sound dollars, honest dollars or baloney dollars, call it what you will, the result is the same. If the farmer can obtain money comparable in value to that which existed when his mortgage was made, or when his taxes were raised to support bond issues on this and that in order to placate the egotism of his home town boosters, and to put velvet in the pocket books of greedy investors, he will be helped. There is no debating the issue. He has been stolen blind; he is now forced to do as he has been done by. My belief is that by regulating the value of money in the interest of the people rather than in the favor of those who have defiled the temple, the farmer's standard of living can be improved. The New Deal has done this as rapidly as safety would permit, and for this it is to be highly commended, even though all its other efforts fail completely.

One thing yet is lacking—not even a serious gesture has been made regarding the tariffs, which constitute mostly a barbed wire network of impediments to trade. I do not want to do more than mention this perilous question. But, the farmer's standard of liv-

ing can never be raised unless he is allowed to sell his products where the demand for them exists and to buy what he needs at prices he can afford to pay wherever he can find it. The implications of the agricultural adjustment program with reference to this phase of the farmer's plight has been demonstrated by profound silence. What may develop later we do not know.[2]

The basic trouble with the New Deal for agriculture is that, in the haste in which it has been set up, the philosophy of the program is full of contradictions. It seems to be postulated upon the fallacy that we are in an era of indefinite duration during which we may be expected to produce more of everything than we want, unless our childishness can be repressed by arbitrary checks. We propose, therefore, to reduce surpluses by taking land out of production, then we proceed to ease the strain of unemployment in cities by driving millions of people to the farms to be engaged in further production of agricultural products. We plan to increase the farm population by artificial means, forgetting that the natural increase of farmers is high and that the growing use of farm machinery is yearly adding greatly to the efficiency of agricultural production and reducing the potential demand for farm labor. We attempt to raise the prices of farm products by paternalistic strategy and place heavy taxes on products manufactured from the farmers' raw materials, making it harder for the consumer to use up the existing surpluses. We decide that to create wealth the products of land, labor and capital must be destroyed without going through the ordinary processes of satisfying human wants. We assume that although agriculture does not need the excess flow of city population, these people need the farm. This is adding plague to disease. Rather than a few people having to live on subsistence levels, we will force all agriculture into a condition of servility. If these nostrums prove to be successful, it will be only when some method has been found for clearing out the rubbish which has blocked the channels of trade near the mouth of the stream so that farm products can find a natural outlet. Until this can be accomplished, the persistence of the present chaotic condition of agriculture may be expected to continue to require the initiation of temporary expedients.

These questions and criticisms have been offered in the hope that we may be caused to take notice of some of the impending

[2] Author's note: On March 2, 1934, one month after this paper was presented and four years and five months after the debacle of 1929, President Roosevelt asked Congress to give the chief executive full power to negotiate trade agreements with foreign countries. For this he deserves the greatest commendation. What he may accomplish, if he is given such power as he has asked, is yet unknown, but it is hoped that the move will be significant. Congress has repeatedly demonstrated its inability to deal satisfactorily with this problem as a body in the past because partisan politics has usually taken precedence over national welfare.

consequences of the vast transformations which are now being forced upon agriculture and trade and industry as well. Whether the contentions that have been made will hold water or not, it remains true that in a time of violent social and economic change, we must learn to expect the unexpected, and to predict that the unpredictable may occur. In any case serious social changes do not occur smoothly, but are more likely to take the form of complete shake-ups when once they are set in motion. The dilemma of the situation is that in trying to remedy one evil we are likely to produce others of even a more serious nature. We are in the constant danger of building long time hazards in agriculture simply by instituting temporary devices for the mitigation of the stress of emergencies. It must be realized that every emergency step to be taken is a potential source of grief later on unless the utmost care is taken to prevent violent reactions from the beginning.

The foregoing statements have been made dogmatically and without proof. No one can actually demonstrate what the future holds until after it comes to pass. It will then be history. The writer, therefore, reserves the right to change his views, and, if circumstances seem to warrant, to repudiate any or all the statements which he has made with reference to this problem, at any time he may feel justified in doing so. But as matters stand at this moment, and unless some amulet is found among the debris and chaos of the present which may possess an "Open Sesame" for the future, it is difficult to see how the mere addition of nothing to nothing, not to mention the destruction of goods already produced, will produce a net gain to society in the long run.

STANDARDS OF PRACTICE FOR RURAL APPRAISERS

(*Editor's note:* The April issue of the JOURNAL OF FARM ECONOMICS included a brief report of the Sub-committee on Appraisals of the National Joint Committee on Rural Credits, which was presented at the annual meeting in Philadelphia, December, 1933. The following is a more detailed report prepared subsequently. The membership of the sub-committee and organizations represented are: Life Insurance Farm Conference, C. G. Worsham and H. D. Thomas; Federal Land Banks, P. L. Gaddis and C. E. Maxwell; Joint Stock Land Banks, C. W. Weldon; American Farm Economic Association, J. T. Sanders and H. C. M. Case; American Farm Bureau Federation, Conrad Hammar and Dick Voorhees; National Grange, E. A. Eckert; American Society of Farm Managers, C. H. Everett and Hudson Burr, and D. H. Doane, the general chairman of the National Joint Committee on Rural Credits. Mr. Burr is chairman of the sub-committee. The committee asks that this be considered as a preliminary report.)

In order to establish and maintain proper standards of practice on the part of those engaged in making appraisals of rural property, the sub-committee on Appraisals of the National Joint Committee on Rural Credits submits the following.

Introduction

The profession of rural appraising calls for men of integrity, analytical ability, experience and knowledge. Upon the opinion of the appraiser is based financial transactions of great importance, and his honesty of purpose must be above suspicion; in his professional capacity he must be entirely disinterested; he is charged with judicial responsibility, and must act with absolute impartiality; he has moral responsibilities to interested parties and to the investing public. These responsibilities cannot be properly discharged unless his motives, conduct, and ability are such as to command confidence and respect.

Basic to any individual success the appraiser may hope to attain, he must remember that first of all he is giving personal service and therefore no technical superiority can ever take the place of the highest standards of practice.

No code can be drawn which will completely define all of the responsibilities and procedures of an appraiser. However, certain principles which would govern the practice of members of the profession and serve as guides for circumstances other than those enumerated, can be agreed upon.

The report of the committee is divided into three parts dealing with (I) Ethics, (II) Definitions, and (III) Procedure.

I. Ethics

1. *Unbiased Activities.* The appraiser in his professional capacity should have no undisclosed pecuniary or other interest in the property appraised, or in the outcome of his appraisal. An appraiser may conduct other types of agricultural activities, however, and may own or manage farms, but in his professional capacity he should be entirely unbiased by such other activities. It is of particular importance that he be uninfluenced by the effect his appraisal may have on any other business activity in which he is engaged.

2. *Hasty Opinions.* An appraiser should avoid giving hasty or ill-considered opinions of value.

3. *Preliminary Reports.* It is proper for an appraiser to make preliminary reports but they should be made only after all of the pertinent facts have been ascertained and weighed.

4. *Conditional Reports.* Conditional reports have a recognized place in appraisals but under no circumstances should they be made without including a statement of their limitations.

5. *Creation of Business.* An appraiser should not be charged with the creation or rejection of business which directly relates to his appraisal. His responsibility is to value accurately a given property at the request of a client or an employer, and is not to create or reject such business.

6. *Over or Under Valuation.* There is no virtue in either over or under valuation. Either may damage parties at interest in purchases, sales, rentals, financing, taxation or condemnation. They prevent agreement between independently made appraisals, thus discrediting them all.

An over valuation invites over capitalization. Under valuation prevents an accurate determination of the safety factor.

7. *Joint and Independent Appraisals.* Appraisers who ordinarily are independent of each other may be retained to make a joint appraisal. Under such conditions the report submitted should reflect an agreed upon result and it is unethical to make separate reports. In case of failure to agree, the dissenting opinions should be separately stated and identified but be made parts of a single report.

Appraisers who have been retained to make independent appraisals of a property may not collaborate or consult with one another with reference to their opinions of the findings. It is considered better practice to gather the basic facts independently, but such information may be exchanged provided it is requested by the client and this fact is set forth in the report.

8. *Remuneration.* An appraiser acts in an important professional capacity and should therefore receive a remuneration appropriate to the responsibility involved and to the training and experience necessary to qualify himself as an appraiser.

9. *Certificate.* In keeping wth the highest ethical standards, every appraisal should be accompanied by an appraisal certificate which should include the following unless these are already included in the body of the report.

A. The scope of the appraisal, i.e., number of pages and paragraphs in the report.
B. An unequivocal and reasonably complete description of the property appraised.
C. The amount of the appraised value.
D. A statement definitely showing the period of years used as a basis for determining earnings, when they are a determining factor.
E. The date or time at which the value obtains.
F. A statement setting forth the amount of the special valuations if any are called for in the assignment.
G. A statement that the undersigned appraiser has no interest in the property appraised; or a statement disclosing all such interests which the undersigned appraiser may have in the property appraised.
H. A certifying paragraph substantially in the following form:
"I (We) the undersigned, do hereby certify that, to the best of my (our) knowledge and belief, the statements contained in this appraisal certificate, subject to the limiting conditions herein set forth, are correct; and that the opinions stated are based on full and fair consideration of all the pertinent facts available; also, that this appraisal has been made in conformity with Standards of Practice of .....
....."

Unethical Practices

10. *Statement of Interest.* It is unethical for an appraiser to have undisclosed pecuniary or other interests in the property or properties that he has been engaged to appraise.

11. *Contingent Fees.* It is unethical for an appraiser to accept an assignment to appraise a property, if his fee or employment is contingent upon his reporting a predetermined or specified amount of value, or is otherwise contingent upon any finding to be reported.

12. *Commissions and Favors.* It is unethical for an appraiser to accept extra commissions, or favors, in connection with the appraising of a property. His compensation must be limited to a fair professional fee for the responsibility entailed and the work and expense involved.

13. *Hypothetical Appraisals.* It is unethical for an appraiser to issue an appraisal report in which the reported value is based on the completion of public or private improvements which are not assured. It is proper, however, for him to comment in his report on proposed benefits or detriments and their possible effect.

14. *Fractional Appraisals.* It is unethical for an appraiser to knowingly participate in a fractional appraisal, the result of which would be different from an appraisal made of the whole. If an appraiser knowingly participates in a fractional appraisal this fact should be disclosed in this report.

15. *Trial Appraisals.* It is unethical for an appraiser knowingly to make a trial appraisal when the purpose of the trial is to discover the level of values he will set.

II. Definitions

1. *Rural Appraisal.* An appraisal is the definite written detailed opinion of a qualified individual or group of individuals of the basic value of a rural property.

2. *Basic Value.* Basic value is the worth of a property derived from such economic elements as earnings, location, and home uses.

3. *Qualified Appraiser.* A qualified appraiser is one who by education and experience has fitted himself to pass dependable judgments upon the value of rural properties. An organization of qualified individuals may make appraisals in the name of the organization.

4. *Rural Property.* Rural property is either real estate or personal property which has value or potential value for agricultural or other non-urban uses.

5. *Rural Real Estate.* Rural real estate is agricultural and other non-urban land with all its fixed improvements. It does not include personal property but includes mineral, oil, timber, riparian and water rights.

6. *Improvements.* Improvements of rural real estate consist only of items which are conveyed with the land as real estate such as

Buildings
Fences
Windmills
Orchards
Vineyards
Permanent water and electric systems
Riparian and water rights

7. *Earnings.* Earnings constitute that portion of the total income derived from the typical use of a property which can be assigned as payment for its use.

III. Procedure

1. *Kinds of Valuation.* In this discussion of appraisal practice and procedure, it is assumed that there is but one kind of appraisal and the value determined thereby is known as the basic value.

The appraiser, however, is often commissioned to report on other kinds of value, which emphasize to a greater or less degree certain features of value. The more important special kinds of value include:

Normal sale value
Forced sale value
Investment value
Speculative value
Condemnation value
Loan value
Assessed value

The process by which these special values are arrived at is as follows:

The property is first appraised in the ordinary manner to arrive at the basic value.

There is then added to, or deducted from this value an amount which reflects the special features emphasized.

The resulting value is designated as the value for the special purpose required. The appraisal report should show the basic value, as well as the special values reported. This practice tends to clarify appraisal procedure and recognizes a common basis for all appraisals regardless of the purpose for which they are made. Since this method gives a common objective, it will tend to give appraisers a uniform method of approach and weighting of factors.

The following are the recognized factors which tend to qualify for special purposes, basic value.

Normal Sale Value. Valuation for normal sales is an opinion of the probable price at which within a reasonable time and under normal conditions, and with a substantial down payment, the property may be expected to change hands from a willing seller to a desirous informed purchaser.

Forced Sale Value. Valuation for a forced sale must necessarily emphasize present earnings of property whether typical or otherwise and present saleability of the property.

Investment Value. Investment value emphasizes security of principal and normal earnings.

Speculative Value. Valuation for speculative purposes gives major weight to probable future increases in earning power, mineral values, urban uses, irrigation, flood control, and drainage proposals.

Condemnation Value. Courts generally recognize that valuation for condemnation proceedings should be based on the highest and best use to which the property may be put. Therefore emphasis must be given to those factors which affect the property favorably and lesser weight to those which affect it adversely.

In establishing condemnation value an appraiser should acquaint himself with what the courts, having jurisdiction, have held in similar pre-

vious cases, and should set the value accordingly. It is recognized that in a condemnation value the function of the appraiser is to apply the principles of the law to the property in question.

Loan Value. Valuation for loan purposes is largely based on estimated amount and stability of earnings during the term of the loan. However, consideration is given to those factors which affect the saleability of the property.

Assessed Value. Valuation of rural property for taxing purposes especially emphasizes present earning power and places a minimum weight on potential earnings.

Determination of Earnings

2. *Sources of Data.* The basic data for determining earnings are crop yields or rent, and ownership expenses. Accounting records or statements of occupants and other informed persons in the community are regarded as the most reliable. Also the appraiser should acquaint himself with the normal crop yields of the territory for types and grades of land and use this knowledge as a guide for determining yield. Taxes, normally the most important item of expense, should usually be determined from the public tax records.

3. *Assumed Use and Operating Efficiency.* The appraiser should ordinarily estimate earnings on the following assumptions.

A. That the property is used and operated in a manner typical for the community, regardless of use, and operation when appraised.

B. The following factors however, may be given some weight:

Property in well established successful operation even if such operation is not typical.

Where certain features of the farm assure the possibility of attracting superior type of operator.

Where the past handling of the property has been such that a downward trend in production is clearly indicated.

Community trends to either higher or lower uses.

C. The following factors are ordinarily given no weight:

Anticipated improvements in the property or changes to a higher and better use.

Possibility of attaining higher operating efficiency.

4. *Prices of Products.* Since it is impracticable or not properly the function of the appraiser, to determine what prices of farm products and consequently farm earnings are going to be in the future, the accepted practice is to use earnings in the past. It is imperative to use a period of years. The period should embrace a sufficient number of years to minimize the effects of extremely high or low prices and should be definitely stated in the appraisal report.

For the sake of uniformity some generally recognized period would be advantageous. Because of variations in the price level the most acceptable base would be one periodically modified rather than one set once and for all. Some governmental agency, the neutrality of whose position is not likely to be challenged, should establish such an earnings period and publish data and reasoning supporting the choice.

5. *Reflection of Earnings in Value.* Earnings are reflected in value by capitalizing them at a rate of return which in the opinion of the appraiser

is proper in view of conditions. The following factors affect the rate of capitalization.

Location. While location influences value directly it is also recognized in the rate of capitalization, on the theory that owners are willing to accept a low rate of return in a desirable location, and expect a high rate in an undesirable location.

Interest Rates in the Community. The mortgage loan rate typical of the community, while not necessarily the rate to use, has an influence. Bank loan interest rates also have a bearing.

Hazardous Operations. Certain types of operation, such as fruit growing, irrigation, and dry land are considered especially hazardous and therefore, the capitalization rate is higher.

Supervisory Burden. The costs of supervision or management may be reflected in the capitalization rate or may be considered as a cost of operation and deducted in arriving at net income.

Tenure of Operation. This affects rate of capitalization of farm land to some extent although it must be recognized that the tenure of operation may change.

A. Capitalization on the net cash rent basis is relatively low since it is assumed that the owner of the land carries no risk of the operation of the land.

B. Capitalization on a net share rent basis is usually at a higher rate than that of cash rent since the owner assumes a share of the risk of the business approximately proportionate to his rental share of the products of the land.

C. Capitalization on the net farm income basis usually carries the highest rate since all risks of the business are assumed by the operator in arriving at net income. Whenever practicable the rental basis of capitalization is preferable to that of net income.

6. *Influence of Location, Home Features and Saleability.* These three features are considered together because they are often interrelated. The major items entering into a consideration of each are enumerated.

LOCATION

Distance from towns and shipping points.
Sizes and types of towns.
Marketing facilities available.
Kinds of roads.
Transportation facilities.
Proximity to nuisances.

HOME FEATURES

Kind of community.
Size and type of residence.
Scenic features.
Religious and educational facilities.

SALEABILITY

Saleability as determined by home and community desirability has an important influence on basic value. Actual sale prices of properties should be considered as an indicator in determining value.

7. *Taxation.* The amount of taxes assessed against land are reflected in

value, because as an item of expense they must be deducted from income before net earnings can be determined. Moreover, taxes are of such far reaching importance that appraisal reports should contain a discussion of them and their effect on value must be described. Some of the taxes ordinarily encountered are state, county and township, road, school, special improvements, such as roads, drainage and irrigation.

8. *Improvements*

Buildings. Cost of reproduction less observed depreciation will in most circumstances serve as an acceptable guide to the value of farm buildings. Where obsolescence is apparent further deduction from replacement cost should be made. For cost of reproduction less depreciation to serve as an index of the value of buildings these must fit or suit the farm. Over improved property should be discounted.

Fences. Fences should be evaluated in the same manner as buildings. However, they may ordinarily be disregarded as a special item of value, as their effect is encountered in the analysis of earnings. They should be enumerated and described in the report.

Wells, Artificial Lakes, Ponds, Etc. The same principles enumerated in the case of buildings apply here also, save that these tend to partake more closely of the nature of land reconstructions rather than land fixtures. Their effect on value is, therefore more nearly calculated in relation to their effect on earnings than in respect to their cost.

Orchards and Vineyards. In appraising land growing perennial crops such as nuts, fruits, vineyards and certain vegetables in commercially adapted regions, the appraiser must recognize their cost and value but also he must recognize the hazards inherent in highly specialized crops, that success in their production is closely related to the individuality of the owner, and that the rate of depreciation should be carefuly considered in view of possible and rapid deterioration following neglect or insufficient care.

9. *Factors not Reflected in Value.* There are a number of factors in connection with rural property which do not always affect the value of the property, but which the appraiser should observe and report. The most conscientious appraising calls for reporting any situations observed in the course of making the appraisal, which in the judgment of the appraiser would be of interest to his client or employer.

The following are a few such factors frequently encountered:

Personal history of operator or owner
Contemplated community and road improvements
Recreational facilities or possibilities of development
Management details

10. *Constructing Reports.* The form of the report varies with the desires of the appraiser and the degree of simplicity or elaboration required by the client or employer. It is the purpose of this article to emphasize those items considered essential in all reports.

Map. A map or plat is essential as it aids the reader of an appraisal report to visualize the property. It need not have the accuracy of a survey, but should be drawn to a definite scale and should show reasonably well the following:

The outline of the property
Location of buildings, fences, streams, roads, etc.

Kinds of land on various portions of the property.

Standard or easily identified legends and characters should be used.

Description. Legal description. This should be accurate and complete.

Physical features of property. These should be conveniently classified preferably in outline form and shown in plat when possible.

Calculation of Value. The accumulation of the major items entering into the final appraised value should be shown:

A. The number of acres and value per acre of each class of land making sub-totals.

It is optional whether the appraiser shows the amount determined by capitalizing earnings and an adjustment for location and other factors, or whether the result of the two is shown as a single item.

B. A total value of land which is the sum of the values of the various classes.

C. An addition to value of land for improvements, i.e., buildings and other items valued separately.

The amount added for improvements is not necessarily the appraised value of the improvements. It may be adjusted to conform with what is justifiable for the property.

D. Adjustment of total appraised value as above calculated to determine any special value called for in the assignment.

Certificate. The certificate should have a prominent place in the report. It should be placed, if possible, so that it cannot be detached from the other main parts of the report.

General

Name by which property is identified.

Name of party for whom appraisal is made.

Name of appraiser.

Address of property.

SUGGESTIONS FOR APPLYING THE PRINCIPLES SET FORTH IN THE APPRAISAL COMMITTEE'S REPORT TO AN ACTUAL FARM APPRAISAL

(*Editor's Note:* The following suggestions have been prepared by Hudson Burr, chairman of the Appraisal Committee, and D. Howard Doane, chairman of the Joint Committee on Rural Credits, to illustrate the application to an actual appraisal of the principles set forth in the preceding report.)

We, first of all, wish to make it clear that there are of course a number of different ways in which each step and procedure can be applied. There are at least two ways in which earning statements may be made and certainly there are many methods for properly applying the influences of desirable or undesirable factors.

It should also be made clear that the illustration which follows is but *one* example and is *not* an expression from the Committee. It is simply a statement from two individuals.

The Appraisal Committee (in its pamphlet) has said that an appraisal is an "opinion" and it is important that this point be kept constantly in mind. Also, it says that the "basic value" which the appraiser sets up is derived from or based upon "Earnings, Location and Home Use." (See numbers 1 and 2 under Definitions.) This gives us a starting point or objective.

Next the Committee tells how earnings may be determined, under the

heading "Determination of Earnings," numbers 2, 3, 4, and 5. Let us now apply these suggestions to an actual case which will first be briefly described.

We will take for our example a corn belt farm of 160 acres in North Central Illinois. It has had good care and has maintained over a period of years a yield of corn of from 35-45 bushels per acre, and other crops in proportion. There are 35 acres in rather rolling permanent pasture and 125 acres in fairly level crop land. There is a good set of improvements. The farm is 5 miles from a small town on a poor dirt road, but the community as a whole is desirable because of the influence of a church and school maintained by a religious organization. Farms are readily saleable because of availability of money and a desire to own land.

When the appraiser goes to this farm he determines from the operator what cropping plan has been followed, what the average crop yields have been for the past several years and what the customary crop-share lease terms are in this locality. It makes no difference whether the owner lives on and operates his own land or whether he is a landlord and lives in town, for it is assumed that on an owner-operator farm the operating expense is equivalent to the tenant's rental share.

Next the appraiser should adjust this data on acreages and yields (which he secures from the operator and which are assumed to represent actual results) to what we wish to call "potential" figures under typical farming. The personality of the operator is eliminated. With the aid of yield records for the county, on similar soil, an attempt is made to determine what on the average the various crops on this particular farm *should* yield and what average acreages of various crops should logically be planted, always assuming typical management.

With these facts before him he makes a table about as shown on the following page. In the example shown here only the basic value is determined, the space for adjusting for kind of value being left blank.

Building Appraisal. The Committee suggests a method quite generally practiced for determining building value, i.e., "replacement less observed depreciation and obsolescence, when the latter applies" (See number 8 under Procedure). We have not set up a building appraisal here because the method suggested is well understood. Of course, a complete appraisal would show them in detail.

From a farm loan standpoint there will be some who will appraise the buildings and then deduct their value from the final basic value shown. Some will add all or a portion of the building appraisal, while others will keep the two values apart so that they may loan for example 40 per cent on the land and 20 per cent on the buildings in keeping with their standard practice.

It is our feeling that the final basic value as shown in this example *includes* the buildings, because cash rent is credited to them under income and cost against them in the form of insurance, taxes and maintenance is charged under expenses.

There may be some confusion in the minds of those who feel that some land rents for as much without buildings as with. To answer the question fairly ask yourself if the land without buildings does not have the "use" of buildings from some other farm. Also could the assumed unimproved tract maintain its fertility and hence yields over a long period without buildings. Further, would it be possible without buildings or the

INCOME

Crop	Acres	Yield	Price[1]	Value	Rent Share	Owner's Part
Corn	60	40 bu.	$ .50	$1,200	1/2	$600
Oats	30	40 bu.	.40	480	1/2	240
Clover	30	2 T.	8.00	480	1/2	240
Alfalfa	5	4 T.	10.00	200	1/3[2]	65
Pasture and Buildings	35		5.00		all	175
	160					$1,320

EXPENSES

Taxes at $1.00 per acre	$160	
Insurance	30	
Maintenance building at $1.00	160	
Management at $0.75	120[3]	
Clover and alfalfa seed	30	
	$500	$500
Net return to owner		$820
Capitalized at 5% ($820 times 20) earning value		$16,400[4]

ADJUSTMENTS—Per Acre.[5]

	Add	Subtract	
Location			
Roads—markets		$3.00 −	
Saleability	$4.00 +		
Home Features			
Church—school	2.00 +		
Final adjustment	$3.00 + or		$ 480
Final appraised basic value (Per Acre, $105)			$16,880
Additional Adjustments for kind of value[6]			

[1] Prices are determined from an average of three or more years and not those being received at time of appraisal. These average prices should probably be determined at the Home Office or by an independent organization. (See "Determination of Earning" No. 4). They should embrace a sufficient number of years to minimize the effects of extremely high or low prices.

[2] In this case 1/3 of alfalfa is shown because it was delivered baled.

[3] There are some who say management is not a fair and regular cost or expense item. If the appraiser shares this view it should be omitted. All items of cost usually and actually occurring should be added, however, such as shelling, threshing, etc., when they are a part of the owner's expenses.

[4] There are many factors that have a bearing on capitalization rate (See No. 5 under "Determinationof Earning"). In this illustration we have arbitrarily used the going interest rate on farm loans and have attempted to reflect all other factors in the "adjustment" figures. It is *essential* that a given factor or influence is not unconsciously used twice under different headings or in different ways.

[5] Every appraiser knows that farm earnings are not the sole basis for determining value. There is a group of more or less intangible factors that have an influence on value and must of course be taken into account The Committee has classed them under "Location, Home Features and Saleability." It might be advisable for a loaning organization for example, to say to its appraisers that they could add to or take from their "earning value" as many factors as in their "*opinion*" seemed advisable provided that (a) they supported their adjustments with their reasons, and (b) that they were certain the indicated per acre adjustment had not already been given effect in the earning statement or any other adjustment.

This makes it easy for administration officers, loan committees or clients to disagree with an appraiser and adjust his final figure to suit a given set of conditions without tearing down the whole appraisal.

[6] In order to simplify appraising procedure and bring into harmony those groups who are constantly appraising for one given purpose it seemed advisable to say that the proper procedure would be to first determine one uniform kind or type of value which the Committee called "*basic value.*" From this the appraiser making a Condemnation Appraisal, for example, would add a certain sum in order to conform with well established Court rulings, i.e. to reach a value based on "highest and best use." Tax appraisers would adjust basic value to determine tax or assessment value—and so on through a list of seven kinds of value defined and explained in the report (See number 1 under Procedure).

use of buildings, to sell crops for the same price that farmers receive for crops which can be and are placed in cribs, bins and mows and sold out of storage and thus not rushed to market at harvest time?

In conclusion, may we repeat that this example is simply our idea of *one way* of applying the Report of the Appraisal Committee? It is also our feeling that any system which tends to break down and show step by step how a given value is determined is an improvement over the old "lump sum guess" in vogue when many of our existing farm loans were made.

NOTES

SOME OBSERVATIONS ON THE SEASONAL VARIATION OF MONTHLY FARM INCOME ESTIMATES

The recent analysis of monthly cash income from farm marketings brought out some interesting points on the elimination of seasonal variation from a statistical series consisting of several components. Two methods for estimating seasonal variation were used in the analysis of this series. For example, in one method of analysis of monthly cash income from grains the monthly income from the sale of each grain was determined, the total income from the several grains added together and this total adjusted for seasonal variation by computing the ratio between the average income each month of the year for the 6 years 1924 to 1929 and the average income of all 72 months of the 6-year period. The estimated income for each January was then divided by the ratio for January, each February by the ratio for February, etc. In the other analysis the seasonal trend was determined for the monthly estimates of income from each grain by the same method as in the first analysis, and the adjusted monthly incomes for several grains combined. These two methods gave somewhat different results. The seasonal variation around the annual average monthly income by the two methods was as follows:

	Adjustment applied to total income	*Adjustment applied to income from individual grains*
January	83.9	89.5
February	81.5	84.8
March	72.3	73.6
April	47.9	51.5
May	59.6	61.1
June	65.0	68.7
July	120.5	112.5
August	170.2	164.5
September	157.2	149.5
October	142.3	138.7
November	102.4	101.8
December	97.2	102.9

Although the same data were used in both calculations the first method removed only that seasonal variation which was left after the seasonal variations of cash income from the different crops had partially offset each other. The second method removed all of the regular seasonal variation leaving only fluctuations due to variation in marketings or prices from month to month. Whenever several series of data, all with pronounced seasonals, are thrown together, decidedly different results are likely to be obtained by these two methods of seasonal analysis, the extent of the difference being largely determined by the variation and the irregularity in the seasonal trend of the individual series. The second method, while requiring more calculations, appears to give much more accurate results.

Another point of interest which was given some attention in this study was the method of measuring seasonal variation. The more common methods in use are (1) the ratio of simple arithmetic means of each month in the year to the average for the entire period, as finally used in this study, (2) the ratio of medians of each month to the ratio for the entire period, (3) the average of variations from a 12-month moving average and (4) the link relative method. A test of the different methods, providing allowances are made for trend in the period studied indicated that the results obtained were not significantly different. The first method was

adopted because it is the simplest to calculate and the most easily understood. Where the seasonal is uniform year after year, as in the case of income from eggs, all methods give nearly identical results. When the seasonal variation is rather irregular from year to year, the difference in results by the several methods is more pronounced but not significantly different when the year to year variation in the seasonal trend of the original series is considered. This would indicate that the use of complicated methods of eliminating seasonal variation is not essential unless one is interested in studying changes which may have occurred in the seasonal over a period of years. In such instances, more refined methods than any of those suggested here should be used.

The effect of a marked seasonal variation in a series of data, especially during a period of downward trend is also of interest. The monthly cash income from cotton in a year varied from $10,000,000 to $25,000,000 in June or July to $250,000,000 to $450,000,000 in October during the years 1924 to 1929. Such a marked seasonal variation requires a severe adjustment which greatly increases the adjusted monthly incomes during the months of February to July and greatly decreases the monthly incomes during September, October, November and December. During the period of declining incomes from 1930 to 1932 this resulted in the adjusted estimates of monthly incomes for any year greatly exceeding the unadjusted estimates. Thus it would seem that the adjusted estimates when plotted on a graph would be somewhat above the unadjusted. However, this is not the situation. The difference is due to the unusually marked adjustments which have to be made to the early months of the year. During a period of downward trend in a series of data with marked seasonal variation such discrepancies are inevitable when adjustment is made for seasonal variation.

The method of marketing many farm crops results in wide month to month fluctuations even after the normal seasonal variation has been eliminated. Many farm crops are largely marketed in 3 or 4 months of the year with marketings during the remainder of the year being small and irregular. For example, about 55 per cent of the wheat crop is marketed in July, August and September and about 68 per cent of the cotton crop is marketed from August to November. An even larger proportion of other crops such as flaxseed is marketed in a relatively short period. The irregularity of marketings in the other 8 or 9 months of the year results in wide fluctuations in monthly incomes which are not highly significant in the total monthly income from the sale of farm products, but make the problem of eliminating the seasonal variations and irregular fluctuations in the incomes from individual commodities or groups of commodities a difficult problem.

C. M. Purves

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RELATIONSHIP BETWEEN FARMERS' LABOR RETURN FROM AN ENTERPRISE AND CHANGES IN THE SIZE OF THE ENTERPRISE

A certain proportion of the producers engaged in the production of any agricultural product can normally be expected to cease producing each year, because of death, retirement or failure. New producers may be

recruited from younger men who hitherto have not engaged in production on their own account, or present producers may expand their production. If the latter occurs, do the more efficient producers expand more rapidly than the less efficient ones, and if so to what extent?

Several studies have been made of the response of producers as a group to changing price conditions, or of the response of individual producers to changes in price. Comparatively little has been done to show how producers react to the returns which they are able to make from their own individual businesses. The type of producers who react most to given changes in prices or in returns affects the measures to be adopted to change this response into given channels.

Changes in the amount of production of a single commodity by any farmer may be influenced by factors other than the returns from that one commodity. The combination of enterprises followed may bring a greater income than any other feasible combination. For instance, the production of corn and oats in certain proportions may result in a higher income than the production of oats alone, no matter how efficiently the latter are carried on. The present supply of certain factors of production, especially the labor of the operator and his family, may be adjusted to the present volume of production, so that the producer would hesitate to expand no matter how profitable the enterprise was, or would not contract it, as long as the cash returns were above the cash expenses. Or the managerial capacity of the operator might not be sufficient for a larger enterprise. Some enterprises might involve work of a very arduous or unpleasant kind, so that producers would be loath to expand production even if returns were fairly high. Far-sighted producers would consider not only what the past returns had been, but what their future returns were likely to be under the proposed new scale of production.

Changes in volume of production by a farmer would probably be the result of his entire experience in producing that commodity. Old experiences would probably affect him less than more recent ones, and experiences of others might also affect his response. Certain types of experiences might be more influential in making a decision than other experiences—one complete failure might counterbalance several quite successful years, or vice versa. Relatively high returns would not only be an incentive for increased production, but they would also help to supply the additional capital needed for an increased business. Conversely, low returns might not provide the operator with enough capital to expand his business, even if he could be reasonably certain that a larger business would result in increased income.

Commercial poultry production can be increased by producers more easily than most other types of farm production, because of a less intimate relationship with feed supply or available land than is true with other types of production. During the past decade there has been considerable expansion of commercial poultry production in California. Part of this increase has been due to new producers entering the field and part of it has been due to increased operations on the part of old producers.

Commercial poultry producers in California, during the period from 1925 to 1930, changed the size of their productive plant according to the returns they made from poultry, judging by the flock records available.[1]

[1] These flock records were made available for study through the courtesy of L. W. Fluharty, Agricultural Extension Service, University of California.

The labor return of the operator and his family, plus the interest on invested capital, was taken as the measure of profitableness of the enterprise. The increase in the value of the laying stock during the year in question was taken as the measure of response to differences in income. (Chickens of the same age were valued at the same price on opening and closing inventories. Changes in value were taken instead of changes in numbers to offset changes in the age distribution of the flock.) If the rec-

TABLE 1. RELATIONSHIPS BETWEEN INCOME FROM POULTRY AND CHANGES IN THE SIZE OF BUSINESS, IN FLOCKS OF DIFFERENT SIZES, CALIFORNIA, 1925 TO 1930

Yearly average number of hens in flock	Flock records	Correlation coefficient[1]
Number	*Number*	
Under 400	185	.525
400– 699	212	.448
700– 999	204	.339
1000–1499	215	.478
1500–2499	158	.406
2500–4999	80	.485
5000 up	22	.422
All flocks	1,076	.453

[1] See Methods of Correlation Analysis, Mordecai Ezekiel, page 127 for formula used—no correction made for the number of observations included.

ords had been available on enough farms for more than one year, the effect of returns in earlier years on the changes in size of business might have been studied.

The degree of relationship between the return to labor and the changes in size of business was about the same in flocks of varying size and in different years, except that flocks of less than 400 hens showed a closer

TABLE 2. RELATIONSHIP BETWEEN INCOME FROM POULTRY AND CHANGE IN THE SIZE OF THE BUSINESS, IN DIFFERENT YEARS, CALIFORNIA, FLOCKS OF ALL SIZES

Year	Flock records	Correlation coefficient[1]
	Number	
1925	38	−.045
1926	57	.326
1927	246	.481
1928	237	.503
1929	254	.414
1930	244	.440
All flocks	1,076	.453

[1] See footnote, Table 1.

relationship than larger flocks, and that in 1925 no relationship existed, judging from the data available from the small number of records for that year. (Tables 1 and 2.) About 20 or 25 per cent of the changes in inventory values were associated with differences in returns from poultry production. When labor and capital returns to the operator and his family were about $1 per hen, no change was made in inventory numbers. When the returns were about $3 per hen, approximately 25 per cent increase was made in the size of the business.

In commercial poultry flocks in California during this period there was some association between the returns received from poultry in any year and changes in the size of the business during that same year. Other types of farming would logically show less response to differences in returns, because of more complex inter-relationships of the factors of production. The relationship found may not have been a causal one. If sufficient information had been available, the effect of other factors on changes in size of business might have been investigated, or the reason which the operator assigned for his changes might have been determined.

Marion Clawson

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VARIANCE ANALYSIS OF VARIABILITY IN PAIRED AND REPLICATE SERIES OF STAPLE-LENGTH OBSERVATIONS ON COTTON SAMPLES

The analysis of variance method[1] of interpreting differences and variation in series of staple-length observations on press-box and cut samples of cotton[2] has been conveniently used in interpreting the probability of significance of differences between estimates of variances contributed from detected sources.

Recently there has been applied to the study of differences and variation in staple-length designation a procedure devised for the appraisal of magnitudes of parts of squared variability.[3] By use of this procedure, estimates of error are isolated from the measures of squared variability and a determination made of the proportionate contributions from different detected sources to total squared variability. This interpretation of the variability has been found desirable in order to evaluate properly the magnitudes of differences between and within series. These procedures have been found convenient also in the interpretation of variability in paired and replicate series of staple-length observations made on different press-box and cut samples taken from the same bales, and in paired and replicate series of observations, made by the same or different classers, on the staple-length of the same samples.

By the analysis of variance method a measure of total squared variability is obtained, corresponding to the sum of squares of deviations from the common mean, and then this total is separated into parts equal in number to the sources of variability detected. This separation of total squared variability into parts according to detected sources from which contributions are considered as having been made provides for the determination of probability of significance of the difference between any two estimates of variance. The difference is derived as the z value equal to half the difference between the natural logarithms of the two estimates of variance, or to the difference between natural logarithms of the corresponding standard deviations (i.e., the difference between the natural logarithms of the square root of measures of average squared variability).

[1] Devised by Dr. R. A. Fisher and his associates and first published in 1923 (Fisher, R. A., and Mackenzie, W. A. *Jour. Agr. Sci.*, Vol. 13, part 3, July, 1923, pp. 311-320.)

[2] As herein referred to, press-box samples are those taken from the gin press-box while the bales were in process of being ginned, whereas cut samples are those taken from the same bales after they had been pressed and tied.

[3] Suggested to the writers by Dr. W. B. Kemp of the University of Maryland.

The probability of significance is then determined by reference to Fisher's z table.

The magnitudes of contributions to total squared variability from different detected sources are determined by removing the "error" from those parts of squared variability other than "error" that enters into the variance analysis of differences. Total squared variability attributable to "error" is then obtained by summation of the individual parts. Proportionate contributions from the different sources are determined by dividing total squared variability into each of the contributing parts. Determination of these proportionate contributions provides measures that have been found convenient in evaluating the relative importance of the sources of variability in paired and replicate series of observations representing staple-length designations.

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Bureau of Agricultural Economics

POSSIBILITIES AND LIMITATIONS OF SUBSISTENCE HOMESTEADS

Federal legislation has made available a fund of $25,000,000 for aiding in the development of subsistence homesteads. The projects which are being developed include a consideration of (1) stranded industrial groups, such as the 200,000 coal miners who will not again mine coal, (2) industrial decentralization and the establishment of subsistence-homestead communities, (3) working-men's garden homes at the periphery of present centers of employment, and (4) agricultural population which is more or less stranded on submarginal land. The ideal in mind is a pattern of life somewhat similar to the Mormon village that combines agricultural and industrial pursuits by allowing the households to live on blocks or small tracts of land and produce a part of their subsistence.[1]

In view of these considerations, and in the light of recent studies, what are some of the possibilities and limitations of subsistence homesteads?

First: What part of the living may the subsistence homestead contribute? A recent study in Massachusetts showed that nearly half of 519 part-time farmers with land holdings ranging from small lots to more than 100 acres produced an agricultural output worth less than $100 per year.[2] Doubtless a much larger percentage of the producers would have fallen in this category had not the investigator selected a part of his sample on the basis of those who were producing at least $100 worth of agricultural products, and had he eliminated the producers who had retired from industrial pursuits. A recent study in Chemung and Tompkins counties, New York, showed the average income of 267 part-time farmers to be $1,184, of which, $94 or 8 per cent was in the form of receipts from farm products sold, and $111 or 9 per cent was in the form of food furnished by the farm for home use. The size of the average farm

[1] Wilson, M. L., Director, Division of Subsistence Homesteads, Department of the Interior, in an address before the American Farm Economic Association, at Philadelphia, December 27, 1933. Published in the JOURNAL OF FARM ECONOMICS for January, 1934.

[2] Rozman, David. Part-time Farming in Massachusetts. Bulletin 266 of the Massachusetts Agricultural Experiment Station, Amherst, October, 1930, p. 113.

was 16.3 acres.[3] A recent study in Monroe County, New York, showed that 25 per cent of 678 city workers with rural land holdings ranging from small lots to more than 100 acres did not produce any items of food, and that 79 per cent of the 500 producers had a food output worth less than $100 per year. The average value of output was $94.50, the median value was $34.25, and the most frequent land holding was under 3 acres in size.[4]

These figures indicate that the average part-time farmer or city worker living in a rural home depends primarily upon industry for his means of livelihood and does not produce a relatively large amount of foodstuffs. In recognition of this tendency, subsistence homesteads should be set up in the proximity of some reliable source of cash income. They cannot be expected to be successful in an isolated location and with only the fond hope that eventually industry will locate in the vicinity and provide funds for the comforts of life.

Second: How much land is required to produce an amount of foodstuffs of significant value? Obviously this depends upon a number of factors, such as climate, soil, type of crop, and intensity of cultivation, but let us merely ask what may be expected in a general way. Should subsistence farming, for instance, be limited to a garden? A recent study in North Carolina shows that a farm garden of one-half acre is worth $168 for a family of six persons, and suggests that its value probably exceeds this amount when the better health of the family is considered.[5] A similar study in New York shows that a farm garden of approximately one-fourth acre is worth $23 per capita, or $115 for a family of five at 1933 chain store prices.[6] On the other hand, Hood's studies in New York show the half-acre garden of the part-time farmer to be worth approximately $50 at farm prices; the average garden of 0.38 of an acre to be worth only $38.[7] If these values are indicative of the possibilities and limitations of a garden of moderate size, doubtless the average subsistence homesteader will need more than a garden in order to produce an amount of foodstuffs of significant value. Perhaps a plot of sufficient size for a garden, for fruits, and for some livestock would be most expedient. It has been shown that the income from part-time farming increases markedly as the value of livestock products produced for home consumption increases.[8] However, this raises another important question. Will the average subsistence homesteader have the time and the inclination to engage in such a variety of farming activities? Judging from the situation among the city workers who live in the rural areas of Monroe County, New York, I doubt it. Sixty-five per cent of the 684 households interviewed did not keep poultry, 92 per cent did not own a cow, and 95 per cent

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[3] Hood, Kenneth. (I) Some Preliminary Results of a Study of Part-time Farms in Chemung and Tompkins counties, New York, 1932. Mimeographed publication of the Dept. of Agricultural Economics and Farm Management, College of Agriculture, Cornell University, June 1933, pp. 5-8.

[4] Tate, Leland B. The Rural Homes of City Workers and the Urban-Rural Migration. Ph.D. Thesis, Cornell University, 1933, pp. 9, 89, 210. (This study is in process of publication as Bulletin 595 of the Cornell Agricultural Experiment Station, Ithaca, N.Y.)

[5] A study by H. R. Niswonger, North Carolina State College, Raleigh, N.C., reported in an Associated Press article in the *Ithaca Journal News*, Ithaca, N.Y., March 7, 1933.

[6] An unpublished study by E. K. Coughran, College of Agriculture, Cornell University, Ithaca, N.Y.

[7] Hood, Kenneth. (II) Should the City Man Move to the Country? Mimeographed publication of the Department of Agricultural Economics and Farm Management, College of Agriculture, Cornell University, Ithaca, N.Y., December 1933, p. 7.

[8] Hood. (I). *Op. cit.*, p. 10.

did not posses swine.[9] A third of the households did not produce any of their vegetable needs during the preceding growing season, and 29 per cent produced no more than half of their needs.[10] The reason for this situation was not necessarily a lack of time or a scarcity of landed property. Many of the city workers had only part-time employment in industry and land holdings of considerable size, yet they devoted little time to farming activities. Under these circumstances it is not so much the amount of land that determines a significant production of foodstuffs, as it is the attitude of the city worker toward the land. And unless this condition is different in the newly established homestead communities, it is doubtful if the subsistence homestead is economically justifiable from the standpoint of the production of foodstuffs.

Third: If the subsistence homestead is not economically justifiable from the standpoint of food production, what are its principal values, and for what types and classes of people is it suited? City workers who have tried a pattern of life similar to that afforded by the so-called subsistence homestead list the possibility of food production as only one of the advantages to be derived. They emphasize in particular the comparatively low property values, taxes, and rentals, the consequent greater opportunity for home ownership, the quieter and more healthful surroundings, the fresher air and cooler breezes, the greater spaciousness and freedom, and the play space and better conditions for children.[11] Evidently there is a justification for much of this emphasis, especially for that given by those who have been former residents of large centers of population. Among the city workers who live in the rural areas of Monroe County, New York, 70 per cent of the homesteads have a value under $5000, whereas 82 per cent of the homes in the adjacent city of Rochester have a value of from $5000 to $10,000 and up. In a like manner, two-thirds of the rentals paid by city workers who live in the rural areas of Monroe County are under $30 per month, while 98 per cent of the rentals in the city of Rochester are from $30 to $50 and up. A further point of interest is that 75 per cent of the city workers who live in rural homes own their property. This percentage is 23 per cent higher than similar figures for the city of Rochester, 38 per cent higher than similar figures for the State of New York, and 28 per cent higher than similar figures for the United States as a whole.[12] If we add the fact that two-thirds of the city workers are skilled and miscellaneous industrial workers with incomes of less than $2000 per year, it is quite evident that the pattern of life afforded by the subsistence homestead offers most to those in the low income groups who are eager for the ownership of a home amid healthful surroundings and who are willing to put forth a special effort to attain this goal. It is not reasonable to expect, however, that the household seeking a subsistence homestead will submit to the rigors and privations experienced by the homesteaders of the past century.

Fourth: What is the most desirable location for a subsistence homestead? From the standpoint of expediency, it should be within a convenient commuting distance of a source of cash income. The fact that a

[9] Tate. *Op. cit.*, pp. 87, 88, 209.
[10] *Ibid.*, p. 207.
[11] Tate, *op. cit.*, pp. 121-23.
[12] *Ibid.*, pp. 38-40.

source of cash income is imperative makes the distance at which the homestead is located from this source a most important matter. A relatively short commuting distance is often desirable,[13] while a relatively long one may result in undue physical strain for the worker and bring about disorganization in family life,[14] and require entirely too much of an outlay for transportation. Rather conservative figures show that if a worker lives less than 1 mile from his place of work his outlay for transportation is approximately 13 cents per day; if from 1 to 5 miles, 28 cents per day; if from 5 to 9 miles, 46 cents per day; and if 9 miles or more, 53 cents per day.[15] In another instance, it has been shown that the average cost of getting to work was increased only $12 per year by moving from the city to the country for the part-time farmers locating within a mile of their city job while the increase for those locating 9 miles or more from work averaged $95 per year.[16]

A second consideration for the desirable location of a subsistence homestead is that it should be on a hard-surfaced road, and on soil of sufficient fertility to allow fair returns from a given expenditure of time and effort. It costs a part-time farmer approximately 11 per cent more to operate a car on a dirt or gravel road than on a hard-surfaced road, and his chance of being independent of charity is much greater on good soil than on soil classified as poor.[17]

A third consideration for the desirable location of a subsistence homestead is that it should be near or within access of the more general public utilities and such facilities as schools, churches and physicians. From the standpoint of school and church attendance and physician patronage, there is a very definite tendency for city workers who live in rural homes to show a greater relationship with the respective locality in which they live than with the city in which they work.[18] And from the standpoint of satisfaction with the subsistence-homestead pattern of life, it should not be over-looked that there is a tendency for those who move into areas without modern conveniences to minimize the advantages of the rural setting and to have difficulty in making adjustments, and a tendency for those who move into areas where most modern conveniences are accessible to make adjustments more rapidly and to become enthusiastic in citing the advantages of the rural home as a place of residence.[19]

In conclusion, it should be emphasized that a family or household has an essential need for a maintenance income in excess of that offered by the average subsistence homestead. Furthermore, that the subsistence homestead cannot be justified from a purely economic standpoint, but only on a basis of general welfare.

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[13] There are cases in Monroe County, New York, where city workers now live in rural homesteads and get to their place of work in Rochester with greater ease and comfort than they did when they lived within the city limits.

[14] Mahaim, Ernest. Les Abonnements d'Ouvriers sur les Lignes de Chemins de Fer Belges et leurs Effects Sociaux. Bruxelles, 1910, pp. 203-207.

[15] Hood, (I). *Op. cit.*, p. 20.

[16] Hood, Kenneth. (III). Comparison of the Cost of Living in the Country and in the City. Mimeographed publication of the Department of Agricultural Economics and Farm Management, College of Agriculture, Cornell University, Ithaca, N.Y., February 12, 1934, p. 5.

[17] Hood, (I) *op. cit.*, pp. 17-22.

[18] Tate, *op. cit.*, p. 120.

[19] *Ibid.*, p. 134.

MEASUREMENT OF AVERAGE DIFFERENCES BETWEEN PAIRED OBSERVATIONS ON STAPLE-LENGTH OF COTTON SAMPLES

Differences and variation in staple-length designations of samples of cotton taken from the gin press-box while the bales are in process of being ginned and staple-length designations of samples cut from the same bales after being pressed and tied have suggested the desirability of obtaining a measure of average difference between two such series of observations. Studies have been made of these differences and also of differences in paired observations on the same samples. Among the methods used is one by which a correction is made for modal tendencies.

In measuring the average difference between paired series of length observations on the same samples the distribution made in one series of observations on samples designated as one inch in another series, for example, are added to the distribution, represented in the second series of observations, made of samples designated as one inch in the first series. The combination of the two distributions is effected by reversing the algebraic sign, or direction of difference, in one distribution in order that a common base may be established and maintained. That is, if in the first series of observations certain designations of one-inch magnitudes are greater and/or less than corresponding designations in the second series, then the first series is considered as representing a lowering and/or raising of the magnitude of observations in the second series on samples previously designated as one inch in the first series.

This condition, of course, is not peculiar to the problem mentioned, but is characteristic of many other instances in which "errors of observation" are inherent in successive distributions. The prevalence of these errors, either chance or others, is particularly common in many distributions representing observations not made by precise measurements, and even when precise measurements are attempted certain errors may creep in, even if only by mere chance.

The first objective in combining the paired distributions mentioned is to establish certain observations representing designations most nearly acceptable in magnitude to different observers or to an individual observer at different times. Another purpose, and perhaps the more important one, in combining two such distributions is to eliminate a frequent tendency for "errors of observation" to be made more often toward the mode than toward the extremes.

In combining paired distributions representing the same samples, with the signs of one reversed, the tendency for each distribution to be longer, or shorter, than the other is eliminated, at least to the extent that this tendency is the same in both distributions. To the extent that the tendencies are not equal, a result is obtained that may be interpreted, for each frequency group in the series, as the mean, or average, difference with the effect of the tendency toward the mode eliminated.

Calculation of mean differences by this method makes use of each observation twice and, because of the variability often characterizing series of paired staple-length observations, affords a more satisfactory measure of average differences than would be obtained if the distributions were not combined. The standard deviation of the differences calculated from

the combined distributions may be conveniently used in some instances to interpret the variation between the two series of observations.

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EFFECT OF AN INCREASE IN POPULATION ON THE SHAPE OF THE DEMAND CURVE

Changes in demand due to increases in population have a different effect on altering the position and shape of the demand curve than changes due to other causes; for example, an increase in income of consumers. In the latter case, the curve will shift upward or to the right (both terms denoting the same movement); while in the former case, in addition to this shift, the shape of the curve will change, or, if it is a straight line, the slope will change.

Price	*Quantities*	*New Quantities*
25	1	2
20	2	4
15	3	6
10	4	8
5	5	10

If we take a simple demand schedule of the straight line type, and double the quantities that the buyers will take at the corresponding prices (under the assumption that the population is doubled and that the new population has the same demand as the old) a new demand curve (straight line) is obtained.

Examination of the two curves will show that at each price both have the same elasticities. Curves that are so related are said to be *iso-elastic,* a term introduced by Joan Robinson.

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COUNTY CONSOLIDATION IN COLORADO

Of all the institutions of government, the county is the only one that has been handed down to us in its original form. Its origin dates back many generations when the pack animal and horse and buggy were governing factors in the formation of county boundaries. With but few exceptions the county organization and its financial policies have remained in this same static condition. Past generations have completely ignored the importance of the county; however, this is no longer true. Present world wide economic conditions have made the people more critical toward the county organization and its financial policies.

In 1931, the expenditures for county government in Colorado were $8.43 per capita or 12 per cent of the total taxes collected in the state. County expenditures amounted to $8,700,000. This figure becomes more significant when it is understood that 35 per cent of the taxes were delinquent in 44 per cent of the counties. There will have to be a change in county government and county expenditures if the people are to continue to pay their taxes. Then too, the county cannot remain the same

and continue entirely aloof when other social and economic institutions are undergoing profound changes. In Colorado many of the present counties have become obsolete through the improvements of transportation and communication. Others have reached the vanishing point through the exhaustion of their natural resources. These factors have caused shifts in population. In 1900, thirteen mining counties which are located in the mountains had a total population of 92,502. In 1930, these same counties had a total population of 26,332, a drop of 72 per cent in 30 years. The last 30 years have seen a corresponding decrease in the mining industry in these areas. The last factor to cause a break down of county government in Colorado has been the existence of large areas of non-patented lands. Little or no tax revenues can be had from these areas. They constitute over 50 per cent of the area of twenty-four of the counties. Now that the people are cognizant of these many county problems they have become fully county conscious. They are presenting a continuous procession of plans with but one aim in mind, namely, to obtain greater efficiency from the use of the tax dollar.

The future outlook for the county should be much brighter than the past or present conditions would indicate. It can never be entirely abolished and its powers and duties transferred to the State House, for subdivisions are essential to any organization that must administer a large area. Then too, there is the question of whether this extreme centralization of governmental control is desirable. Furthermore, there will always be local divisions of state government whether they be called counties, districts or townships. Since the county is the one branch of government the average individual is most closely associated with, its future reform measures should aim at making this unit the most efficient and economical political subdivision, for here he may exercise his privileges as a voter to bring direct and immediate action. Moreover, this is the attitude of students of government and the many taxpayers leagues; they are seeking ways and means of getting more in return for their tax dollar.

Now that the people are county conscious and fully realize their inability to pay for the existing county expenditures, they are questioning the financial adequacy of the various county units. In Colorado, as elsewhere, the unit with greater assessed valuation and the most people was found to be the most economical from a per capita cost basis. In Colorado, counties with less than 20 million dollars in assessed valuation and below 20,000 in population paid more than three times as much for county services as compared to costs of similar services in the wealthier counties, above 20 million in valuation and 20,000 in population. Similar findings were made in Mississippi and North Carolina only the costs of the poorer counties were higher compared with the wealthier units. In other words, these wealthier counties with low costs might be set up as standards. This standard would not necessarily be the same in every state as economic and social conditions vary widely. In Colorado, an arbitrary standard for a county unit should have at least 20 million in assessed valuation and 20,000 in population. However, it will be impossible to reorganize all counties into units that will meet this qualification. As for area in square miles it has very little significance as a cost factor. This standard

has been designated as an economic unit of county government in Colorado, and establishes a working basis for a program of county consolidation. The advantages and disadvantages of this plan will be presented by a detailed discussion of one of the proposed consolidations in Colorado. It will show the manner of analyzing each group.

San Luis Valley Consolidation

Physical Features.—The San Luis Valley is located in the southwest portion of the state and includes for the most part all the area of the following counties: Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache. It was once the location of an immense lake, now drained by the Rio Grande River. Mountains surround this area except on the south along the New Mexico border. The Continental Divide forms the west and northwest boundary, and is crossed by three passes over 10,000 feet in altitude. The Sangre De Cristo and Culebra ranges are on the east and the roads that go over these mountain passes are more than 9,000 feet in elevation. In fact all the Colorado roads that lead into this valley cross passes over 9,000 feet in elevation.

The total area of the six counties is 8,061 square miles. Of this amount 5,694 square miles, or 70.64 per cent, are non-patented or non-taxable land. The actual area within the immediate valley is approximately 7,000 square miles as there are about 800 to 1,000 square miles in Saguache and Mineral counties which lie across the Continental Divide in other valleys, therefore, they cannot be included as a part of this valley. These more remote sections are inaccessible from the county seat when snow closes the passes, and the people living in these isolated areas are forced to do their trading in other counties. It is natural therefore that their social and economic interests would not be centered in the San Luis Valley.

The taxable land embraces about 20 per cent of the valley area since national forests and other non-patented lands account for 65 per cent and grazing land 15 per cent. The latter is of little value as a source of tax revenues. A circle with a radius of 20 miles drawn about Alamosa, the only town of 5,000 inhabitants, would include all the farm land except that in Saguache County. A circle with a 40-mile radius would include at least 90 per cent of the tax revenue raising land, and about the same proportion of the population. One may conclude from a study of the physical factors that the valley is a logical area for one county instead of six, with one centrally located town of sufficient size to serve the county and be a center of social and economic activities of the people. The taxable land area is relatively small in proportion to the total area and should not be forced to raise tax revenues for more than one county government.

Twenty per cent of the land of this valley is trying to support six county governments since taxes are based on the ownership of land. In 1931, these six counties had an assessed valuation of 41 million dollars and a population of 41,000. Not one of the counties had more than 10 million dollars in valuation. Therefore, no single one of the counties complied with the standard set up in the previous discussion. In 1931, this group of counties raised $237,000 for county administration alone, which was $50,000 more than was necessary for similar services in Weld County

and Weld County had 20,000 more people and an assessed valuation of 90 million dollars.

Tax delinquency gives further light on the financial problems of these six counties. For a five year period, 1927 through 1931, Costilla County tax collections averaged only 45 per cent of the amount levied. Conejos collections were 71 per cent for the same period. Tax collections for 1931 were extremely low, averaging 60.6 per cent for the entire group. This would indicate that these people lack the ability to pay their taxes and to maintain the six county governments. The primary source of these tax revenues is farming on an intensive scale, for most of the valley is irrigated. This area has been extremely hard hit by present low prices for farm products and the cost of shipping goods out of the valley over the high mountain passes. These costs have left the producer very little income for tax purposes as is reflected in the tax delinquency. Advantages of consolidation for the San Luis Valley counties may be enumerated as follows: First, it would mean one government instead of six; second, the San Luis Valley as one county conforms to the standards for an economic and social unit of government; third, the higher assessed valuations would mean lower costs per capita; fourth, a saving in administration would be at least $50,000; fifth, it would equalize taxes for there would be only one tax rate instead of six; sixth, the majority of the population would be within 40 miles of the principal town, Alamosa. Therefore, it is possible to establish many advantages for county consolidation but there are some serious obstacles which will have to be overcome before its adoption can be hoped for.

The most serious of these obstacles opposing this plan are: First, the state constitution which prevents changes in boundaries, county seats, etc.; second, political opposition; and third, opposition of the people. The last two obstacles are particularly difficult to overcome as political parties have their very foundation in the county machine and the people do not accept political change readily because they are afraid of the unknown. Likewise, many of these county groups have fought for their county seats and county boundaries and they have not forgotten the trouble they had. Others do not wish to lose their identity and become a small parcel in a large group when they now hold the present standing as a group. In many sections local feeling and interest are very strong, especially in the old mining counties where many of the old inhabitants still retain their faith in the once great mines and mining industry.

This plan of county consolidation has many desirable features but due to the opposition and the time, effort, and money needed to conquer these objections, it would probably be more advantageous to follow the more recent trends, such as county manager, redistribution of county functions to units of larger area, since in county consolidation the introduction of modern business methods are only secondary measures and may not enter the program at all. Any saving that might be realized would be indirect and not a direct attack on county business problems.

Present day changes have been directed toward financial reorganization and the introduction of the most recent business practices. This has been the basis of the county reform measures in North Carolina, Virginia, New York and Pennsylvania. This gradual elimination of one function at a time is not as painful as a state wide consolidation plan would be.

There seems to be no one plan which entirely fulfills our expectation as a cure-all for our many county problems but all these suggestions have a place in the scheme of county reform.

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TECHNICAL RECONSTRUCTION AND THE GROWTH OF PRODUCTION IN THE AGRICULTURE OF THE USSR

At the beginning of the first five-year plan (1928) the agricultural economy of the USSR was characterized to a large extent by the predominance of small individual peasant farms and consequently by low technique. The average size of an individual peasant farm in 1928 amounted to only 4.03 hectares and the technical level can be illustrated by the fact that 74 per cent of the sowing was done by hand; up to 10 per cent of the tilling was done by wooden plows; and up to 40 per cent of the threshing of cereals was done by flail and other hand methods.

The fundamental social reconstruction of agricultural economy during the first five-year plan in the form of organization of kolkhozes (collective farms) and sovkhozes (state farms) along with machine tractor stations brought about a fundamental technical reconstruction of agricultural production, which, in turn, became possible with development of the heavy industries, especially the manufacture of agricultural machinery.

While in 1928 the number of peasant farms united into kolkhozes amounted to 1.7 per cent covering 1.2 per cent of all peasant sowings, in 1933 the kolkhozes united 65 per cent of the peasant farms with a total grain area of 75.6 per cent and the average size of a collective farm amounted to 434 hectares, i.e., a hundred times larger than the previous size of the individual farm. If we add to this the sovkhozes (the average size of which was 2303 hectares in 1932), then the whole socialized sector of agriculture in the USSR occupied in 1933 84.5 per cent of the total area of grain crops of which 73.9 per cent of the grain sown area was occupied by the collective peasant farms, while 35 per cent of all the peasant farms, left in the individual sector, possessed only 15 per cent of all the sowings (sovkhozes, 10.6 per cent).

Such alterations in the social structure of agriculture and the tremendous increase in the average size of agricultural enterprises have brought about the possibility of fundamental technical developments by way of replacing obsolete hand methods with the most up-to-date technique (which can only be employed by large scale units), such as mechanical methods of tilling the ground, of harvesting and so on, as well as in regard to fertilization, selection, etc. All this has brought about an increase of the sown area, higher yields and general growth of production. The latter is especially apparent in regard to those cultures, the development of which, owing to the low technical level, formerly was insignificant.

At the same time it is necessary to point out that the first five-year plan was "not so much a period of a rapid rise and a powerful sweep as a period for creating the prerequisites for such a rise and such a sweep in the near future" (Stalin). The upward movement in agriculture proceeded not only slower than that of the industries (especially the heavy

and machine-building industries), but also not so uniformly in all its branches; bread grains and some technical cultures giving the greatest increase, while at the same time there was a decrease in stock breeding due to the fact, that before the reconstruction the greatest numbers of cattle were concentrated in the hands of the large commercial peasant farms (kulaks).

The figures in the following table illustrate the sown areas of the basic crops and their total amounts before the War, at the beginning of the five-year plan and in 1933:

TABLE 1. ACREAGE AND PRODUCTION OF VARIOUS CROPS

	Sown area In mill. of hectares			Total amount gathered In mill. of centners		
	1913	1929	1933	1913	1929	1933
Total sown area	105.0	118.0	129.7	—	—	—
All cereals	94.4	96.0	101.5	801.0	717.4	898.0
Technic. cult.	4.5	8.8	12.0	—	—	—
Cotton	0.69	1.06	2.05	7.4	8.6	13.2
Flax (long fibre)	1.02	1.63	2.40	3.3	3.6	5.6
Sugar beets	0.65	0.77	1.21	109.0	62.5	90.0[a]
Oil seeds	2.00	5.20	5.79	21.5	35.3	46.0

[a] The low figures of sugar beets in 1933 are due to poor yields; in 1930 the amount of same reached 140.2 mill. centn. from an area of 1.04 mill. hectares.

To these must be added a number of entirely new cultures, including sub-tropical, which have developed very rapidly during the last years. Among these are the new textile cultures, like rami, jute and so on, and ether, medical, soy beans, tea, etc.

Besides the general growth of production it is especially interesting to

TABLE 2. COMPARISON OF ACREAGES IN VARIOUS CROPS IN THE USSR AND THE UNITED STATES

	USSR 1933	USA[a] 1930
Total sown area	100.0	100.0
Grain crops	78.1	60.5
Wheat	25.6	17.5
Corn	3.0	24.6
Technic. total	9.3	15.7
Cotton (fibre)	1.6	12.9
Flax (fibre)	1.9	—
Sugar beets	0.9	0.2

[a] Annuaire International de Statistique Agricole, 1931–1932.

note the increase in relative importance of technical and special cultures, particularly, cotton, flax, oil seeds, etc. In this connection it is interesting to compare the distribution of sown areas of the USSR and the USA (data for latter obtained from the statistics of the International Institute of Agriculture).

Thus we see that in respect of distribution of the cultures the USSR differs considerably from the USA, but at the same time, while increasing the importance of technical and special cultures, the USSR makes great efforts to secure for its industries home grown raw materials and to free itself from the importation of raw materials from abroad.

It is of special interest, therefore, that according to the program of the second five-year plan a further increase of the sown area and of production is contemplated, the increase in production to be attained chiefly by means of higher yields. Thus, during the second five-year plan (1933-37) it is intended to increase the total sown area only by 4.1 per cent, the acreage of cereals to be increased by 5.1 per cent. It is contemplated that the production of grains will be increased 58 per cent; cotton 77 per cent; flax (fibre) 80 per cent, and sugar beets 320 per cent.

Table 3 gives the figures of actual yield per hectare in the USSR and that planned for 1937 in comparison with the calculations of the Industrial Institute of Agriculture of the average European yields and those of the USA (in centners, per hectare):

TABLE 3. COMPARISONS OF YIELDS OF VARIOUS CROPS

	USSR		Aver. West Europe[a]	USA[a]
	Average 1928–32	Planned 1937		
Wheat:				
Winter	8.6	12.0	12.7	10.9
Spring	6.1	8.5	—	—
Barley	8.2	10.5	12.8	4.6
Oats	8.3	11.2	14.0	10.1
Sugar beets	120.1	200.1	244.8	248.5
Flax (fibre)	2.2	3.7	3.9	—

[a] Annuaire International de Statistique Agricole, 1931–32.

Thus, although the increase of the average yield per hectare during the five years is planned at 40-60 per cent over 1928-32, these figures are, however, owing to the reconstruction and rise of agricultural technique in process, quite realistic.

The growth of agriculture and increase of production are the result of an increase of productivity of peasant labor in connection with the change to collective forms of agriculture and improvement of technical equipment, as the result of both more efficient utilization of available peasant livestock and implements and tremendous government investments in agriculture.

The extent to which each peasant farm has been improved in regard to general equipment and agricultural machinery during the period 1928-32 can be seen from the following figures: in 1928, before the peasant farms joined the kolkhoz, general equipment and agricultural machinery of each poor and middle peasant farm amounted on an average to 115 rubles 87 cop., and in the same farm within the collectivized holdings, 211 rubl. 12 cop., i.e., the value of equipment has increased on each present farm after joining the kolkhoz by more than 82 per cent.

The amounts of total capital investments in agriculture have increased still more as a result of the organization of machine-tractor stations, the growth in size of sovkhozes, irrigation and ameliorative works and so on. Thus, the total cost of implements and machinery in agriculture, which amounted in 1928 to 269 million rubles (out of which the socialized sector possessed an amount of 169.5 million rubles), had increased to 4286 mill. rubles in 1932, out of which up to 3090 mill. rubles, belonged to the socialized sector. The total cost of agricultural machinery and tractors has increased during the same period from 1099 million rubles

to 2380 million rubles, and that of irrigation and ameliorative engineering constructions (without taking into consideration the amounts spent by the kolkhozes and by the peasants) from 827 million rubles to 1544 million rubles. Out of this amount 840 million rubles were spent upon the irrigation of cotton growing areas, increasing the latter by 650 hectares. Finally, the capital investments during the same years in the construction of different agricultural objects (cattle yards, silos, garages, repair shops, living houses, etc.), have increased from 5072 million rubles to 6207 million rubles.

At the basis of the power capacity reconstruction of agriculture during the first five years has been laid the organization of machine tractor stations, as a special means for serving the former small and now collectivized peasant economies through state machine tractor organizations. The MTS (machine tractor stations) represent a form of government organization for the serving of tractors, modern threshing and other machinery (combines and so on) to the collective economies (and partly the sovkhozes, as not all of the latter have the corresponding machinery) on the basis of special trade agreements with them. They are powerful organizations with hundreds and thousands of the largest most up-to-date machinery.

Up to 1928 there were only a very few tractors in the USSR and these were distributed among separate economies and utilized inefficiently. According to statistical records of June 1929, out of the number of kolkhozes which possessed tractors, 85 per cent had 1 tractor each, and only 0.4 per cent had more than 5 tractors each. In 1932, the tractors were concentrated in the large mechanized units and now the machine tractor stations possess 52 per cent of the tractors and the sovkhozes 42 per cent. The growth of the total number during the period under review can be seen from the following table:

TABLE 4. NUMBER AND DISTRIBUTION OF TRACTORS

	Number (in 000)		H.P. (in 000)	
	1929	1933	1929	1933
Total number of tractors.....	34.9	204.1	391.4	3100.0
Number in MTS.....	2.4	122.3	23.9	1782.0
Number in Kolkhozes..... (all systems)	9.7	81.8	123.4	1318.0

It may be added that in 1930, in the MTS there were only 7 combines, while in 1933 there were 11,500. For 1937 it is planned to raise the power capacity of the tractors to 8,200,000 horse power, and the number of combines to 100,000 units.

We shall not dwell in detail upon the different kinds of agrotechnical measures, such as chemical fertilizers, the introduction of improved seeds, seed selection, etc. It is sufficient to state that in spite of the limited extent to which fertilization and improved sowing seeds were used a very short time ago, it is now planned in regard to cotton, for instance, to fertilize with nitrogen and phosphorus 80 per cent of all the irrigated land under cotton, in regard to sugar beets 100 per cent of phosphorus fertilization, to carry out fully fallow tilling, 100 per cent sowing of assorted improved seeds, and so on.

Thus, although the agriculture of the USSR is still on a very low technical and cultural level, the measures described above will secure for it in the near future tremendous progress on the road to improvements and growth.

It may be added further that there can be noted at the same time a rearrangement of agricultural regions and of the agricultural productive powers partly due to the new locations of industries and partly to the springing up of new industrial centres. The former so-called "non-black-soil" consuming belt is gradually being turned by means of amelioration and the selection of special varieties of grains into a productive region and one of wheat growing withal. The irrigation of the trans-Volga steppes and the South-East changes these droughty regions into powerful and stable wheat regions. Cotton and rice from the Central Asia are spreading in the regions of North Caucasia. Such drawing in of new regions into agricultural production aims at both a general increase of production and the better serving of the industrial regions with agricultural products of their own production.

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BOOK REVIEWS

Agriculture and the Trade Cycle, by John H. Kirk. London: P. S. King and Son, Ltd., 1933. Pp. xiii, 272. 12s.

An inherent tendency of agriculture to overproduce is the basic assumption upon which the author builds his thesis of the relation of agriculture to the trade cycle. This characteristic of agriculture is contrasted with "the happy situation of the United States Steel Corporation, which in the autumn of 1932 had managed to work down production to 13 per cent of capacity" (p. 12). The happiness of this situation apparently lies entirely in the corporation's ability to maintain per unit prices in contrast with falling agricultural prices. The exact meaning of "overproduction" is never made clear. At times it is an increase over production of a previous period (p. 96), again it is a production which has put agriculture out of gear with industry (p. 99), but more generally it is a production of agricultural products that the market will take only at reduced prices. Little attention is given to the possibility that this "out of gear with industry" might be due to a failure on the part of industry, or that falling agricultural prices might be due to this same failure.

Overproduction in agriculture is held to be an important factor in bringing on the depressions of the post-war period. With reference to the slump of 1920-21 it is said, "On the side of agriculture a leading cause of the debacle was, as usual, overproduction." And while the collapse of 1929-30 was due to a variety of causes, "Perhaps the two principal reasons were the necessarily temporary, because artificial, investment boom of 1925-8, and, once more, agricultural oversupply under the inspiration of technical reform" (p. 98). The author designates as "The Agricultural Revolution" (p. 106) the improvements in methods of agricultural production, that have been introduced since 1923.

The book has two parts. The designation of Part I as "The Effect of Trade Cycles on Agriculture" is much less suggestive of the contents of its six chapters, than is "The Responsibility of Agriculture for Trade Cycles" of the three chapters of Part II. The latter contains the main argument of the book, and the former is more a background for this argument, than it is a separate thesis as the division into parts suggests.

The first chapter is introductory and the next two deal with the conditions of agricultural supply, and the demand for farm products. The prime difficulties of agriculture are found in its inelastic supply and the inelastic demand for farm markets rather than in the failure of domestic industry to produce or in the nation's unwillingness to buy the products of foreign industry and thereby improve the market for farm products. The fourth chapter "Marketing of Staple Produce" considers the large proportion of the retail price that is distributive charges, the imperfect competition among marketing agencies, and effects of storing staple commodities. Some recent "agricultural crises" and "palliative measures" that have been attempted are next considered. The final chapter of Part I deals with the problems and consequences of overproduction. Rapid technical changes are held largely responsible for this overproduction in agriculture.

Part II begins with an evaluation of "Some Theories of the Trade

Cycle" after which the author "plunges" into his theory of the trade cycle and emerges as he says in the preface "with what may turn out to be some novel conclusions."

The main argument of his theory runs as follows: Fluctuations occur in the output of agriculture, and these fluctuations are capable of causing pronounced fluctuations in general trade. The principal links between the two are to be found in the behavior of savings and in investment in agricultural countries (p. 207).

The fluctuations in agriculture are periodic and arise out of farmers' reaction to preceding prices, rather than from any cyclical variation in factors beyond the farmers control, affecting crop yields. Three years is the usual period of these fluctuations and this is determined by the duration of what the author calls the productive period in agriculture. Thus far he is in general agreement with the notion of cycles as they appear in (say) hog production. However, he fails to recognize the variation in the length of the cycles of the different animal enterprises. His finding of a single "production-period" for all agriculture is in disagreement with this variation.

These periodic fluctuations in agriculture are transmitted to industry through "savings." When prices of farm products fall due to increased production (which in turn was caused by preceding high prices) because of inelastic demand, consumers spend less for these products. This reduced expenditure is not compensated for by increased spendings in other lines. "Since the impulse to thrift is inborn, the economies on agricultural produce are almost certainly divided between savings and other expenditures—not wholly devoted to expenditures" (p. 44). Thus, the reduced spendings of farmers, because of reduced income, are not compensated for by increased spendings of consumers, the total spendings of the economy are reduced and a slump is in progress. The farmers' response to lower prices is to reduce production. As a result, prices rise and farm incomes are increased. Apparently, thrift is less common among farmers, they spend their increased incomes and there is a recovery from the slump. The result is a self-perpetuating series of fluctuations of approximately three years' duration. However, it is argued that agriculture's elasticity of supply is restricted to relatively small changes in price. In cases of large changes in price this elasticity is often negative, since large volume is necessary to maintain total receipts at the lower prices.

In addition to the short "production-period" cycle a longer cycle of about eight years is explained. With respect to this cycle, the connection between agriculture and trade is "via the investment activities of the developing (and debtor) countries, whose credit and incentive to develop vary with their agricultural receipts" (p. 194). Part of the evidence offered in support of this thesis is the close relation between variations in investment (measured by the aggregate value of building permits issued in twenty-seven cities of twelve states) and variations in the agricultural income of these twelve of the United States for the period 1920-1930. There are probably more reasons to believe these two series moved together because of common causes than to believe that changes in agricultural income caused changes in building activity in the cities. The author hopes his conclusions will not be taken too seriously until it becomes possible to test and evaluate them. In further testing and evaluating it might be

well to consider the following: How much stress should be put on the idea of "periodicity" in trade cycles and the attempt to find a single cause for fluctuations in business? Have the monetary and credit factors been overemphasized with too little attention to other possible causes of ups and downs in trade and agriculture? Finally, are the troubles with which agriculture is beset the fault of agriculture, and can they be cured merely by adjustments within agriculture? Is it true that if only agriculture could control production as industry does that agricultural prosperity would be assured? Has this control made industry and industrial workers prosperous? Most proposals for farm relief are predicated on affirmative answers to these questions.

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Protective Tariffs, by Frank D. Graham. New York: Harper & Brothers, 1934. Pp. xi, 176. $1.00.

This is the sixth of a series of small volumes on "Current Economic Problems," edited by Professor Paul T. Homan. The series is designed (1) to furnish college students with material supplementary to the description and theoretical content of elementary economic texts and (2) to meet the needs of general readers. The present reviewer thinks that the volume here under consideration and the one other of the series which he has read are better adapted to serve the first purpose than the second except for those lay readers who have more than usual economic acumen and background or who are willing to take statements on authority. The author himself comments on the difficulties of expounding "the most complex branch of economic theory in a handbook."

The main chapter headings are: The Nature of Protection, Critique of Popular and Fallacious Arguments for Protection, The Argument for Free Trade, Rational Protection, Anti-Dumping Legislation and Special Forms of Foreign Trade Control, and The Future Commercial Policy of the United States. The appendices discuss the more or less intricate subjects of The World Price System in Its Relation to Commercial Policy and International Economic Transactions and the Balancing of Claims and Counterclaims.

Professor Graham has done an unusually good job of presenting the main principles involved in the subjects listed; some will feel that he has even leaned over backwards in presenting the arguments for "rational protection" and also the advantages of dumping in certain hypothetical cases. Naturally he has devoted most attention to fundamentals, especially to the economies of specialization, and to the application of the principle of comparative advantage. He has, however, given special consideration to such timely issues as the relations of trade restrictions to international debt payment, unemployment, and the business "cycle," and has paid particular attention to reciprocity, pointing out the bargaining advantages as well as the dangers of discrimination and tariff wars which it presents. His emphasis upon the advantages of unilateral tariff reductions as compared with reciprocity is noteworthy, as is his call for a clarification of American policy in view of its change from debtor to that of creditor status.

This call, however, is likely to meet much the same response as similar

calls in the past, despite the merits of Professor Graham's presentation. It is true that his book will be helpful in the hands of the good instructor in economics in making a dent in the ideas of some students. Some of these students, particularly future instructors, will carry these ideas and principles through life and possibly even a few others will be permanently benefitted by his presentation. But however well grounded most students of this and similar treatises may seem to be, when they leave college and their particular and immediate business interests run contrary to these principles of sound national and international commercial policy, most of them will consider the principles academic and national policy will probably be guided by "realistic" and "practical" considerations in the future as in the past. The author, as well as the reviewer, is perhaps bouyed up somewhat by the hope that truth must prevail in the end, and that constant dripping must in time wear away the stone of error, but when one considers the past history and the present status of international commercial policy he cannot become enthusiastically optimistic about radical and permanent improvement very soon.

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Farm Accountancy Statistics for 1929-30. International Institute of Agriculture. Rome: Imprimerie de la Chambre des Deputes, 1933. Pp. lxxxvii, 616. 50 lira. [Third year. In French, but the tables are keyed to translations in the introduction.]

This report, the third in its series, reflects progress in two directions: in extension of interest in the possibilities of comparable statistics of the details of the farm business by type or system of farming by countries to additional countries; and in interpretation of the materials. The method of presentation is essentially that adopted for the first report; that is, tabulation of the details of farm organization and the costs and returns from operation of specifically described farms sorted into closely comparable groups.

The plan seems to have been to establish a system of farm accounting theoretically capable of being uniformly applied in all countries; to enlist official cooperation of farm accountancy offices in using the system, or at least in transforming the data as obtained into the forms required; to draw upon these offices annually for data classified according to a designated schedule of sizes, organizations, and systems of farming; and to assemble the data for publication and for other purposes. Given annual data of satisfactory detail and distribution, much light could be thrown on national and international questions related to agriculture and to wise agricultural policy. The Institute would in time become for the world at large what the Swiss Secretariat has sought to be for Switzerland. The plan is ambitious, but regardless of present opinion as to ultimate success with respect to some of its aspirations, it is not hard to concede real values to the statistical series contemplated.

The first report summarized 8,653 farm businesses in 14 countries of Europe for 1927-28; the second covered 9,936 in 16 countries for 1928-29; the third covers 11,744 farms in 20 countries, including 19 records from the Punjab of India, the first records brought in from non-European lands. Six of the countries contributed data from fewer than 35 farms each for 1929-30, whereas Germany reported on 3,520 and Netherlands

on 2,715. The twelve others contributed between 100 (Lithuania) and 896 (Austria). Proportional representation was highest from Denmark, with three-fourths of 1 per cent. The numbers of farms in many of the subgroups are not impressive, but here and there groups are large enough to give rather stable averages, the movements of which over three years are interesting if not entirely convincing. These comparative figures hold out the real promise for the future of the project.

Farms are divided into two classes, large farms, and the more numerous peasant farms, on which the operator and his family do most of the work. The peasant farms are tabulated in some one of 56 categories representing distinct systems of farming. In each system so far as the data permit the records from each country are segregated and averaged by geographical location, size of farm, and year. For three countries only regional distribution was attempted. Some turnover in the farms constituting the sample for consecutive years is indicated, but these are held to be unimportant except in the smaller groups of farms.

The data for each farm, or the mean values for each group, are given in a series of eight tables beginning with the distribution of the total land area by kind of use, then distribution of the crop land or arable area, the capital values by classes of items, gross returns, sales, costs of production, and final results, which include family earnings from the farm, return to own capital, net return per hectare and as a percentage of farm assets, profit or loss, and the "social income," attributed to hired labor, family labor, own capital, taxes, and rates. The areas are converted to hectares, values to gold francs. Percentages have been liberally used for convenience of readers. Means of reconverting to the original units are provided. Having located a group in the first table the same group is readily found in the corresponding location in subsequent tables. This scheme of tabulation is a bit cumbersome to follow through if one is interested in the complete record of a group, but such interest is perhaps secondary to comparisons which are made easier by the scheme used.

Progress in interpretation has been in the direction of supplying general information about natural and economic conditions affecting farming in the several countries. The introductory section has been improved. An appendix contains discussions and summary tables showing among other items yields of crops, movements of prices, sales, index numbers and the like derived from general statistics of the several countries, rate of return to capital, and an article on the extent of the representative character of the accountancy statistics, which appears in English in the Institute's Monthly Bulletin of Agricultural Economics and Sociology for October, 1933. Probable error analysis and regroupings of data in the larger samples lead to the conclusion that 60 or more reports for a country give a stable average which can be used to represent the country. This conclusion will not hold generally in the United States for samples as large as 300 reports from a single state, and probably needs modification for European agriculture. Most significant trends in these reports are improvement in statistical presentation, critical inquiry into the obvious, and the tempering of enthusiasm about implications that may all too easily follow from comparisons adventitiously suggested by mechanical associations of data.

S. W. Mendum

Bureau of Agricultural Economics

The Mainstay of American Individualism, by Cassius M. Clay. New York: The Macmillan Company, 1934. Pp. xiii, 269. $2.50.

The author of this interesting little book calls himself a layman in the field of Agricultural Economics. His grasp on economic problems, and his numerous references to technical publications, however, indicate that he is not unfamiliar with the work that has been done in this field. It is also evident that he has a broad understanding of the agricultural industry, and that he approaches the problem from a sympathetic viewpoint.

The greater part of the book was written before the development of the 1932 campaign, but part of it has been rewritten since that time, and a new chapter added (VII) which contains a summary of the "new deal" agricultural program. The author aims to "relate present difficulties to the flow of past events and thus to provide an integrated viewpoint of the whole subject." He aims to stress "underlying policies rather than special measures." While he states that there is no panacea which will afford relief for agriculture, he leans most heavily on a reduction of tariffs.

A chapter is devoted to the development of the present agricultural situation under the heading of "Changing Frontiers." Changes in consumption, changes in population, and the progress of the agricultural revolution, are listed as underlying factors; but they are characterized as forces which are at work in other industries as well as in agriculture. Increase of taxation, decline of competition, and lowered foreign demand are held to be forces which have placed agriculture at a disadvantage compared with other industries.

Evidence is presented to show that the increased tax burden bears heavier on farmers than on other groups. This is perhaps carried a little too far when it is contended that municipal taxes borne by city consumers reduce their buying power and lessen the demand for farm products. Whether this is true or not would seem to depend upon how the taxes collected are spent.

Competition is held to have declined in many other industries while it has not lost its force in agriculture, which places farmers at a bargaining disadvantage with the industries in a position to hold volume in line with the amount of product that can be sold at a given price. The author does not believe that such methods can be successfully applied to all industries without revising the existing basis of American institutions, and he does not believe that they can be applied to agriculture in the long run without governmental coercion of farmers. He believes, however, that unless we are prepared to have the government take them over, there is no reason why corporations whose dominant position is due to control of some special resource or essential agency of production, should not be subject to thoroughgoing regulation. Where strategic industrial advantage depends upon a high tariff he would gradually withdraw the tariff duty.

Reasons for the lowered foreign demand are discussed in the familiar terms of war debts, monetary difficulties, and tariff reprisals, with the conclusion that:

"The one thing that will help more than anything else is the restoration of foreign buying power. Lowered foreign purchasing power constitutes the greatest single obstacle to lasting farm relief.

"The revival of foreign purchasing power may be promoted in a number of ways: by a reduction of the American tariff, and adjustment of the war debts or a resumption of foreign lending.

"The soundest step is a reduction in the American tariff, which would enable our foreign debtors and creditors to pay for our surplus exports in goods and services."

The author's central thesis is found in the above quotation. Except for government control of inevitable monopoly situations, he believes that the farmers' best interests will be served by the preservation of free markets, both domestic and foreign.

The farm relief efforts of the past decade are summarized by saying that America refused to face the fundamentals of the situation, and so far has refused to take the alternative to subsidized agriculture, namely, gradual withdrawal of tariff subsidies that unduly favor industry. The philosophy of the Agricultural Adjustment Act is questioned on the grounds of: (1) difficulty of finding human brains to plan wisely and well; (2) when the government undertakes to represent the conflicting interests of capital, labor and consumers, one group or the other, is likely to be sacrificed to political expediency; (3) the program is nationalistic and therefore contrary to our long-term aims.

Sherman Johnson

The Brookings Institution

The Menace of Recovery, by William MacDonald, New York: The Macmillan Company, 1934. Pp. ix, 401. $2.50.

This book is a review of the campaign promises of Governor Franklin D. Roosevelt while a candidate for the presidency, the points of harmony and of discordance between these promises and the Democratic Platform, and a resume of the work of the administration during the first year of President Roosevelt's term of office. Extracts from the seven most important recovery acts are given in the Appendix.

The appraisal of these acts in operation is made fearlessly and in the main, as the title indicates, critically. The author presents mostly facts, with some attempt at economic analysis. Of the Agricultural Adjustment act he says,

"President Roosevelt had received what he had expected—an experimental measure. Thanks to Congress and his advisers, however, the measure was an ill-digested compromise some of whose provisions, in the extraordinary latitude of authority which they gave to the Secretary of Agriculture, were dangerous if not actually unconstitutional."

That the author is not impressed with the results thus far accomplished under the act is indicated in the following remarks.

"In spite of the large government donations which the farmers had received and the still larger ones that lay in the future, agricultural 'adjustment' by the end of the year had hardly passed its initial stage. Enough had developed, however, to demonstrate upon what hollow and unstable foundations much of the program had been built."

The C.W.A. is seen as a large system of government doles under a less objectionable name, but possessing many of the evils of a dole by discouraging honest effort to secure private employment. He is critical of many things done under the C.W.A. as projects which the country could ill afford. This point illustrates some lack of depth in analysis which is

evident here and there. With 5,000,000 unemployed workers who are willing to work, it is difficult to see how the country can less afford the improvements which they might make if at work than it can afford their idleness.

The Emergency Banking Act, the Tennessee Valley Authority, the Securities Act, the Home Owners' Loan Act, the National Industrial Recovery Act and the Gold Purchasing program are described, their purposes and aims outlined and the first year's results summarized. The author does not view the results through any rosy-hued glasses but attempts to show merits as well as short-comings and dangerous precedents. He says,

"The credit items in the national balance sheet at the end of 1933 were neither few nor unimportant. The spirit of cheer and hopefulness with which the country entered the year 1934 offered an agreeable contrast to the gloom with which it faced 1933, 1932, 1931 and 1930. If the optimistic forecasts of unemployment relief put out in the summer of 1933 fell short of realization, some millions of men and women had nevertheless found work and the extremes of hunger, cold and general privation had been mitigated. Some thousands of banks that were closed or in serious difficulties had resumed business, business activity in general had increased, many industries had expanded their operations, the commodity price level had risen, and money was moving more freely and in larger volume through the channels of trade. Some thousands of home or farm owners who were threatened with loss of their properties had been enabled to hold on, important public works had been begun, and acreage and crop control had diminished somewhat the prospect of troublesome crop surpluses and depressed agricultural markets. The ban upon many dishonest or unfair practices in business had been a healthy purge, and fixed minimum wage standards, although in most cases almost farcically low, had at least established a poverty line below which the workers were not expected to fall."

However, he feels that much of the prosperity which followed these steps which may have been justified to tide over a crisis should not be regarded as desirable or adequate to eradicate the disease.

"For certain elements of the recovery program there must assuredly be praise. The abolition of dishonest or unfair practices in trade and of ruinous competition in industry is unquestionably a thing to be desired, whatever reservations must be made regarding the means by which the end is sought. The fundamental purpose of the Securities Act, the publication of full and truthfull information regarding securities issues, is obviously beneficient, as is the removal of anti-trust-law obstacles to such railroad consolidations or joint operations as efficient public service and investment security demand."

However, the author feels that it is not sufficient defense that the government has meant well and has done some good things but that some of the actions set in motion may involve such a radical departure from tried and proven paths that he questions the value received for the price which will be paid. For the inevitable drift toward regimentation which he feels is inherent in the program the author has little sympathy, nor can he see any justification. He says,

"The line which separates the recovery policy as yet from socialism or

from the kind of state capitalism that obtains in the Soviet Republic is, of course, clear" but, "The line of demarcation, however, is being rapidly and thoroughly obliterated and the transition to a socialist order skillfully prepared."—"The recovery program is shot through with economic fallacies and social vagaries."

F. P. Weaver

The Pennsylvania State College

The Planning of Agriculture, by Viscount Astor and Keith A. H. Murray. London and New York: Oxford University Press, 1933. Pp. xvi, 186. $2.25.

The authors of this book present a concise but comprehensive analysis of the economic considerations involved in the planning of an agricultural policy for Great Britain. In the foreword by Sir Arthur Salter, the peculiar situation of British agriculture is set forth in the statement that "agriculture is the occupation of two-thirds of mankind but of little more than one-twentieth of the inhabitants of this island." Obviously such a situation calls for a far different national policy than would best fit a less highly industrialized state. Past agricultural policy is characterized in this foreword as an alternation "between periods of neglect or inaction and periods of hasty and inadequately considered activity." In the introduction by the senior author, the British agricultural policy of subsidies and quotas since the war is characterized as haphazard and consequently expensive.

A brief review of the present organization of British agriculture covering population, land utilization and tenure, management and control, farm labor, state assistance, and marketing is presented in the first chapter. This is followed by a discussion of the effect of the present depression on agriculture. Special emphasis is placed upon the break-down of the monetary system and the failure of price properly to equate supply and demand. The authors point out that recent trends towards increased control in economic life generally have made the public more open-minded toward economic planning for agriculture. The alternative of state control and control by industries themselves are compared. Among the obstacles to the organization of the agricultural industry to control prices are listed the difficulty of standardizing farm products, the fact that commodity production is not closely localized, the numerous opportunities for substitution of one food for another and the small size of the farm unit.

The efforts of other countries to enhance price by reduced production are reviewed briefly and summarized as generally unsuccessful. Such control could hardly succeed in a country like Great Britain which imports from one-half to two-thirds of its food supply. Furthermore, a flat reduction of the diversified production of British farms would disorganize farming systems, stereotype production, and discourage progress in productive efficiency. The authors point out the fact that farmers are constantly reorganizing their business to meet changes in economic conditions but their progress is retarded by shortage of capital and by the uncertainty of future prices. Furthermore, they see little to be gained through improved market organization.

Under the heading "The State and Reorganization," three types of policies are suggested: (1) temporary relief, (2) maintaining British

agriculture at an artificial level, and (3) reconstruction and reorganization. In the first there is danger of aggravating the causes of the depression on one hand and of falsely stimulating agriculture on the other. The authors maintain that the second policy can only be justified on the grounds of (a) national defense, (b) health, and (c) stability. Of these they consider only the third as significant and even that as of little importance in a country with a large stable middle class such as Great Britain. Economic reconstruction is judged the only feasible permanent policy since the British urban population will not, in the long run, support a permanent subsidy of agriculture.

Of the various artificial aids to agriculture, the following are considered: (1) prohibitions, (2) tariffs, (3) quotas, voluntary and compulsory, (4) import monopolies, and (5) exchange depreciation. Of these the authors prefer tariffs. They object especially to "national" quotas but concede that "global" quotas properly administered may operate effectively. Some attention is given to supplying long term credit to the farmer as a means of avoiding the nationalization of land. Special emphasis is placed on the need for agricultural education and research—particularly in the economic field.

The general conclusion reached is that with the gradual breaking down of the old laissez-faire competitive system and the increasing degree of state control, agriculture must receive more constructive attention in national planning. The authors suggest that the livestock industry and the fruit and vegetable industry should be given definite tariff protection and otherwise encouraged since in these lines of production the British farmer has the greatest comparative advantage. In general, they feel that Great Britain will continue to be a great exporting nation and her industrial success will depend to a considerable extent on a supply of cheap food. Home production of semi-luxury and perishable foods and the importation of cheap staples seems to them preferable to a policy of economic nationalism.

This very logical and clear-cut analysis of agricultural planning is especially interesting to the American reader at this time when we, too, are devoting so much thought and effort to the development of a definite agricultural policy. The agricultural resources of this country and the relative importance of the agricultural industry are, however, so different from those of Great Britain that the conclusions drawn for that country have little direct application to our conditions.

George A. Pond

University of Minnesota

Research in Agricultural Income—Scope and Method, John D. Black, Editor. New York: Social Science Research Council, 1933. Pp. 158. $.70.

This report is one of a series of twenty on social and economic research in agriculture prepared under the direction of the Agricultural Advisory Committee of the Council. Its first part, occupying about 60 per cent of the volume, consists of a series of papers by various contributors discussing aspects of agricultural income, including the income concept, sources of data on agricultural income, and research methods and devices in its study. The second part consists of a series of shorter or longer comments

on "Suggested Projects Involving a Special Consideration of Methodology" in agricultural income research.

The series of articles making up the first part of the report is opened by one entitled "Scope and Content" by A. G. Black and J. D. Black. It states the important uses of statistical series on income as being (1) measures of the condition or well being of an industry or class in an area, region, or country at a given time; (2) measures of the distribution of total income among the factors of production; (3) measures of the buying power of the population; and (4) measures of the relative effectiveness of different individual producing and consuming units. It discusses also the operations involved in income research, including a definition of income, sampling considerations in obtaining data, the definition of the universe from which the sample is to be drawn, and the determination of factors associated with differences in income between areas, countries, and classes. The remainder of the article consists of a discussion of the definitions of income and wealth.

This paper is followed by a discussion by J. D. Black on the valuation basis of income measurement. It expresses the importance of fitting the basis of valuation to the specific uses for which the results of the study are intended. Many important considerations of valuation are here briefly discussed which merit much fuller discussion than it was evidently feasible to give them in view of the space limitations of the handbook. The basis for valuation of farm-produced supplies used by the farm family, the value of farm labor used in farm work, the valuation of farm real estate in calculating farm income, and the valuation of the annual use of buildings, are a few of a long list of valuation problems touched upon in the article.

The next article is one by M. R. Copeland on the nature of wealth and income, in which the author treats agricultural income as a component part of the national income. He argues that the accounting concept is the most serviceable one to be followed in any treatment of national income. He points out in a tabular statement certain debit and credit items which constitute the final balance of the national income. Business and government operating and maintenance expense paid to other enterprises for materials, supplies, and services may be assumed to equal and cancel business and government duplication in value of output as measured by operating and maintenance expenses paid to other enterprises. A similar equality and cancellation exists between business and government depreciation and depletion expenses over against business and government value of output at the expense of depreciation and depletion of national resources. These items represent the duplications which must be eliminated in getting at the actual national income. This income itself consists on the debit side of the labor income received by the national economic system plus the property income received from the same source. This total equals and balances the value of national goods and services consumed plus the value of national goods and services saved. These two sums if properly computed must balance at a figure which represents the total national income.

The remainder of this article is a thoughtful and careful statement with reference to the data necessary and the methods desirable to follow in arriving at the accounting system of debits, credits, and the final value

representing the national income. Special attention is given to the data needed in computation of agriculture's share in this income.

The remainder of this section of the report includes a brief statement by J. A. Becker on the physical basis of agricultural income, a statement by O. C. Stine and L. H. Bean on the content of farm income, and statements by various persons on available income series.

The second portion of the report—that devoted to "Suggested Projects Involving a Special Consideration of Methodology"—contains a discussion of eleven research "projects," some of them divided into several subprojects. The presentations of these projects vary greatly in length and quality. Some of them consist merely of a half page statement of the problem proposed for study and brief suggestions on sources of data. Those which are more nearly complete are for the most part statements of work already in progress or completed. The majority are, however, singularly incomplete on the important matter of methodology.

In the reviewer's opinion, the two which are most complete and adequate from the point of view of the declared objective of this section are "Income Series by Economic Groups" by Ernst H. Wiecking, and "Farm Income Index Series for a State" by Dorothea D. Kittredge. These statements go fully into the two important aspects of research, that is, sources of data and the methodology in analysis and preparation.

C. L. Holmes

Bureau of Agricultural Economics

Research in Farm Real Estate Values—Scope and Method, John D. Black, Editor. New York: Social Science Research Council, 1933. Pp. 78. $.60.

This bulletin is No. 19 of the series on "Scope and Method" of research in agricultural economics and rural sociology. Aside from some brief introductory statements, the report deals with suggested research projects in farm real estate values.

Sixteen persons are listed as contributors. Five of these contributors are connected with the U. S. Bureau of Agricultural Economics and the others represent eight different institutions in six states and the District of Columbia.

The introductory statements set forth some pertinent facts regarding (a) research in farm real estate values and its relation to other fields of economic research, (b) federal and state projects finished or in progress, and (c) sources of data.

The body of the report is devoted to outlining a list of thirty-six suggested research projects grouped under the following nine headings: (a) Projects relating primarily to the character and mechanism of the farm real estate market; (b) Projects relating primarily to the collection of data on farm real estate prices and related items; (c) Projects primarily concerned with describing and explaining the movement of farm real estate prices and related items in the past; (d) Projects relating primarily to geographical variations in values; (e) Projects relating to forecasting of farm real estate prices; (f) Projects relating primarily to appraisal policies and practice; (g) Projects relating primarily to farm buildings; (h) Projects relating primarily to social considerations or public policy; and (i) Miscellaneous projects.

The plan of handling most of the projects is to give the title, a short statement of objectives, and a discussion of the correct methodology to be employed. In about one-third of the projects listed, a statement of objectives is given without any discussion of methodology. A wide variation exists in the space devoted to the remaining projects, ranging from discussions covering less than half a page to detailed accounts covering four or five pages. The brevity in the treatment of some projects may be explained for the most part by the fact that certain projects are "joint" with those described in other publications in the "Scope and Method" series. Fifteen of the thirty-six are listed as "joint" projects. In only a few instances—particularly projects 4, 21, and 22—may the authors be charged with apparent hasty and incomplete treatment of the subject.

The authors are to be commended for the complete manner in which they have mapped out the field of research in farm real estate values. The report is more valuable because it tends to give generalized facts on many projects rather than detailed descriptions of the methodology of a few.

Because of the widespread interest at the present time in land values and appraisal methods in connection with farm loans, this report is timely and should stimulate worthwhile study of a field in which comparatively little research has been done.

Harold Howe

Kansas State College

Price Differentials in Wheat Futures Between Kansas City and Chicago, by Raymond W. Baldwin. Chicago: University of Chicago Press, 1934. Pp. 46. $.75.

The author states as the purpose of the study "to investigate the factors that cause wheat prices to fluctuate, relative to each other in the large terminal markets," and, as stated on page 2, "to try to discover what these factors are and to arrive at conclusions as to the relative importance of each." His study is largely limited to inter-market operations between Chicago and Kansas City markets.

Although a number of studies have been made, principally by the Food Research Institute, pertaining to the spreads that have existed between futures in a given market, practically nothing has been published as to what caused the widening and narrowing of spreads between markets other than some general statements that are usually made in text books on marketing or on organized speculation.

In chapter II, page 10, he states, "The responsibility for the high degree of equilibrium in the grain markets lies with the spreader." As pointed out later, what he means is the inter-market operators which includes those who are not purely spreaders in the restricted meaning of that term.

Spreading, he says . . . "consists in the purchase of a future option in one market where the price is low, and the sale at the same time for forward delivery in another market where the price is high, transporting the produce from one to the other, if necessarily to fulfill the contract. . . ." In a footnote he states that the term "spreader" is used in a broad sense, and that large hedgers are responsible for the great bulk of the inter-market operations in futures. The operations of the latter, while con-

sidered as spreading operations by many individuals, are for the most part not purchases and sales made at the same time or simultaneously, and, therefore, they do not come within the term "spreading" as defined by him.[1]

It would have been more desirable to have avoided the use of the words "spreaders" and "spreading" and have held to the term "inter-market operations," which is more inclusive and on which his study is primarily based. Pure spreading operations between markets are relatively small in volume and over a period of time probably have only a little effect on prices, whereas inter-market operations taken as a whole represent a larger volume of trading, and, therefore, ought to have a greater influence on prices. The distinction between the two can be illustrated by the following examples:

An illustration of pure spreading would be a case where a speculator makes a sale of 5,000 bushels May wheat at Kansas City and at the same time makes a purchase of a like amount of that future at Chicago. An inter-market operation, which would influence the spread in price, and yet not be "pure spreading," is a case where a cash grain concern has 1,500,000 bushels of actual wheat it wishes to hedge. In order to do so it may sell 500,000 May wheat at Kansas City and 1,000,000 May wheat at Chicago. The Kansas City-Chicago spread is affected in that had the entire 1,500,000 bushels been hedged in Kansas City, the spread, theoretically, would have been wider than what would have been the case when only the smaller amount was hedged.

In Chapter III he treats the relationship between the Kansas City-Chicago spread in price of futures and the shipping cost. He finds that although the spread in price of May wheat may be less than the shipping difference, the spread in price between cash grain at Kansas City and Chicago may be large enough to permit shipment. He also finds that low export rates via the Gulf result in a tendency to narrow the spread between these markets.

In Chapter IV the author discusses the effect of demand and supply of cash grain upon spreads between Kansas City and Chicago. A short crop of winter wheat in the Southwest he finds will result in a narrowing of the spread whereas a large crop will be accompanied by a wider spread. He does not, however, explain that the former is brought about by light hedging on the short side of the market, greater competition for cash grain and the purchasing of futures for long account as the mills would probably need to draw on elevator stocks for grain to be used for grinding. A large crop, on the other hand, results in more hedging on the short side. He states (page 27) that, "Traders who are interested in the price of wheat are often more concerned over the factors which affect the forces of supply rather than those of demand." This he believes is due to the inelastic demand for wheat and that traders know about how much will be used by the consumer. The fact is that the traders are interested in the demand side but have little accurate information concerning it. The current information pertaining to changes in shipping demand, export sales, mill buying is at present inadequate and inaccurate. The traders

[1] In practice the transactions are not made simultaneously. The one side of the spread is first taken care of in the small less liquid market, and as fast as the trades are made in that market the other side of the spread is taken care of in the larger market.

do, however, watch the weekly changes in visible supply figures as indicators of changes in demand.

On pages 29 to 35 the author analyzes various factors in relation to the spread in the prices of May wheat between Kansas City and Chicago. He found that very little relationship existed between the size of the United States wheat crop and the spread in prices of May wheat between Kansas City and Chicago. This also was the case when comparing the size of the total winter wheat crop with the size of the spring wheat crop in the United States. When the combined production of wheat in Kansas, Oklahoma, and Nebraska was used as one of the variables, a coefficient of 0.66 was obtained with a standard error of $\pm$ 0.127. Using only the production for Kansas gave a coefficient of 0.65, the standard error being $\pm$0.13. When the receipts of wheat during 1906-29 at Kansas City were taken as one of the two variables, the coefficient was somewhat higher or 0.773 with a standard error of $\pm$0.97. For the post-war period of 1922-29 the coefficient was 0.922, with a standard error of $\pm$0.05.

A close relationship was found to exist between the exports of hard winter wheat and the May Kansas City-Chicago spread, the coefficient being 0.84 with a standard error of $\pm$0.118. In years when the exports were very large, the spreads were the widest; indicating, he says, that exports via the Gulf are a supply rather than a demand factor.

The last few pages of Chapter IV contain sections pertaining to the July, September and December spreads. The author states that the Kansas City-Chicago July wheat spread widens during the winter and spring seasons until the peak is reached in June and July for the reason that the accumulation of wheat in Kansas City during July threshing season causes the Kansas City price to be depressed relative to the Chicago price. The spreads for September and December futures he finds are wider than those of the July delivery.

Although touched upon on pages 32 to 35, differences in quality or varieties of the offerings of grain on contracts as affecting spreads is considered at greater length in the appendix of the monograph. Two errors occur on page 44. The discount of "five" cents referred to in the first paragraph should read "three" cents. The last sentence on that page also needs correction as the discount after July 1, 1903 was five cents and after July 1, 1904 two cents.

A point which could have been mentioned by the author which affects the inter-market operator is that in case of a "squeeze" at Chicago, grain would probably be shipped from Kansas City to Chicago. Should the squeeze occur at the smaller market, however, grain would not be shipped to Kansas City from Chicago because of the higher freight rate when shipping westward. In that case, the short would either obtain country run grain in the southwest or pay the fiddler.

On the whole, the monograph is a worthwhile contribution and the author deserves credit for having attempted to do work in a field which students have generally feared to tread. His correlations are of great interest and more could be done in that field.

Paul Mehl

Grain Futures Administration

NEWS ITEMS

The annual meeting of the American Farm Economic Association will be held at Chicago, the last week in December. Headquarters of the Association will be at the Palmer House.

New Library-Building for the International Institute of Agriculture at Rome

The new building for the Library of the International Institute of Agriculture at Rome, to house one of the largest collections of agriculture in the world, has now been completed. It has been constructed with the funds supplied by the Italian Royal Commission for the administration of estates in the use of the Institute and is planned according to modern principles of library service. On the 6th of March the Commission handed over the new building for the use of the Institute.

An undergraduate major in Agricultural Economics at Montana State College has been approved, effective at the beginning of the coming school year in October. A new course in Land Economics has been added to the curriculum.

The Department of Agricultural Economics, Montana State College, is taking an active part in directing the research necessary for proper land use planning in Montana under the Rural Rehabilitation Program of the FERA. Professor R. R. Renne who acted as State Director of CWA Project F-6 "Farm Tax Delinquency, Land Values and Mortgage Foreclosures" is directing completion of the work on tax delinquency and land ownership for the Rural Rehabilitation Program and Professor E. A. Starch is directing the work on cropping records and general coordination of the basic research essential to a land use planning program in the State.

Mr. Ellsworth W. Bell, of the Department of Agricultural Economics, Massachusetts State College, has been on leave in Washington to assist with the dairy program of the Agricultural Adjustment Administration.

Mr. C. A. Bonnen, Farm Management Specialist, Texas Agricultural Experiment Station, is serving as a member of the State Cotton Review Board of Texas.

Mr. Henry E. Brockway, of the Foreign Agricultural Service, Bureau of Agricultural Economics, died suddenly at his home in Glendale, California, on May 7.

Mr. Robert D. Bruce, research assistant in Agricultural Economics, University of Tennessee, has resigned to accept a commission as lieutenant in the U. S. Army.

Mr. Jasper P. Burnett and Mr. John L. Primm have been appointed research assistants in Agricultural Economics at University of Tennessee.

Miss Mary Byrd, Graduate Research Assistant in Rural Sociology and Agricultural Economics, Louisiana State University, is Assistant Supervisor for Research Projects of the Emergency Relief Administration.

Dr. W. L. Cavert, Extension Economist, University of Minnesota, has been granted leave of absence to work with the Farm Credit Administration at St. Paul in the organization of a research and statistical service.

Leave of absence of Professor L. E. Call, Dean of Agriculture and Director of the Kansas Agricultural Experiment Station has been extended to December 31, 1934, so that he may continue to serve as President of the Federal Land Bank at Wichita, Kansas. During his absence, Dr. W. E. Grimes, head of the Department of Agricultural Economics, is serving as acting Dean and Director. Professor Harold Howe is acting head of the Department of Agricultural Economics.

Director P. V. Cardon of the Utah Agricultural Experiment Station, has been granted leave of absence to accept temporary appointment with the Agricultural Adjustment Administration as Regional Director of the Land Policy Section, Division of Program Planning. Director Cardon's region embraces the six southwestern states, Colorado, New Mexico, Utah, Arizona, Nevada, and California. His headquarters will be at the Utah Agricultural Experiment Station, Logan, Utah.

Dr. H. C. M. Case, Professor and Chief in Farm Management, has been made Head of the Department of Agricultural Economics, University of Illinois, beginning September 1, 1934. Dean H. W. Mumford has been the Acting Head of the Department during the formative stage of this Department which resulted from the consolidation of the former Department of Farm Organization and Management, Division of Agricultural Economics, and Agricultural Marketing activities of the College and Experiment Station.

Mr. Robert Clarkson, formerly county agent of Teton County, has accepted the position of Director of Rural Rehabilitation for Montana.

Mr. Paul Carringer and Mr. R. E. Horne have been employed by the Department of Agricultural Economics, University of Tennessee, to make a study of rural tax delinquency in that state.

Mr. Walter C. Davis, in charge of meat grading and meat standardization Bureau of Agricultural Economics, died at his home in Alexandria, Virginia, on March 26.

Mr. J. N. Efferson of the 1934 graduating class, Louisiana State University, has received an assistantship in the Department of Agricultural Economics and Farm Management, Cornell University, for 1934-1935.

Mr. Sterling Evans, former District Agent in the Texas Extension Service has been elected President of the Houston Bank for Cooperatives.

Mr. P. P. Fankhauser resigned on April 1 from the Department of Rural Economics, Ohio State University, to enter the employ of the Production Credit Corporation at Louisville.

Dr. Ward W. Fetrow, recently in charge of the cotton section, has been selected as head of the research work of the cooperative division, Farm Credit Administration.

Mr. Paul L. Fletcher, Assistant Agricultural Economist, Virginia Polytechnic Institute, on leave since May 1, 1933, has accepted the position of manager of the Jersey City branch of the Eastern Cooperative Livestock Marketing Association, and Mr. S. K. Cassell, a former student of the Institute will take his place in the department.

Mr. L. G. Foster has been granted a leave of absence by the Department of Rural Economics, Ohio State University, until July 1, 1935, to act as Secretary of the Bank for Cooperatives at Louisville.

Mr. John R. Gauss, instructor in Agricultural Economics at Pennsylvania State College during Dr. Lininger's leave of absence for work with the Brookings Institution, has resigned to accept a position as chief statistician with the Farm Credit Administration at Baltimore.

Mr. W. L. Gibson, Jr., who received the Master's degree in Agricultural Economics at Virginia Polytechnic Institute in June, 1934, has been appointed to the staff of the department at the Institute.

Mr. C. W. Gilbert, resigned his position as extension economist in farm management at the University of Vermont in July 1933 because of ill health and is now at Vermont Sanatorium, Pittsford, Vermont.

Mr. Howard Golden, a graduate student in Agricultural Economics, at the University of Missouri has recently accepted a position as Junior Economic Expert with the Farm Credit Administration where he assumed his duties on May 15.

Mr. Austin G. Goth, formerly of the Agronomy Department of the Montana Experiment Station, has accepted a position in the Department of Agricultural Economics of the same institution as Farm Management Demonstrator.

Mr. R. M. Green, Professor of Agricultural Economics, at Kansas State College, will be on leave of absence until December 31, 1934, to serve as Vice-President of the Production Credit Corporation at Wichita, Kansas.

Mr. Frank T. Hady, Assistant Professor, Department of Agricultural Economics, South Dakota State College, resigned, effective May 15, to accept a position with the Division of Subsistence Homesteads, Department of the Interior, Washington, D.C.

Mr. J. F. Hembree, Division of Cotton Marketing, Bureau of Agricultural Economics, has been stationed temporarily at the Texas A. & M. College to assist in the analysis of data and the preparation of a manuscript in connection with the local cotton marketing study of the Division of Farm and Ranch Economics of the Experiment Station.

Mr. T. J. Hendrickson and Mr. James H. Marshall, research assistants in Agricultural Economics at University of Tennessee, have resigned to accept positions as educational directors of CCC camps.

Professor O. R. Johnson of the Department of Agricultural Economics returned to his resident duties at the University of Missouri for the

winter semester, after spending the fall term with the Farm Credit Administration where for a part of the time he worked on Production Credit and the remainder of his time on analyses of farm appraisal methods.

Dr. V. P. Lee, Head of Agricultural Economics, School of Agriculture, Texas A. & M. College, has recently been elected Vice-President of the Production Credit Corporation for the State of Texas.

Dr. C. G. McBride has been granted a leave of absence from the Department of Rural Economics at Ohio State University to serve as Secretary of the newly created Ohio Milk Commission.

Professor J. E. McCord, who has been in charge of farm management research in the Department of Agricultural Economics, Pennsylvania State College, for the last ten years, has been granted a leave of asbence for a year to organize the research program in agricultural economics for the University of Puerto Rico. Professor McCord plans to be in Puerto Rico early in July and spend the greater portion of twelve months on the island.

Dr. W. G. Meal resigned his position as extension specialist in marketing at New Jersey Agricultural Experiment Station to accept a position with the Agricultural Adjustment Administration at Washington, D.C., where he will work on the development of programs for fruits and vegetables.

Mr. W. E. Morgan recently resigned as Assistant Registrar of Texas A. & M. College to accept a position with the Corn and Hog Section of the Agricultural Adjustment Administration.

Mr. Harry C. Norcross was appointed extension economist in farm management at the University of Vermont November 1, 1933, succeeding Mr. C. W. Gilbert, resigned.

Mr. R. E. Post, acting head of the Department of Agricultural Economics of South Dakota State College, resigned, effective June 1, to accept a position with the Division of Statistical and Historical Research, Bureau of Agricultural Economics, Washington, D.C.

Mr. G. H. Reuss, formerly assistant economist in the Department of Agricultural Economics, Louisiana State University, is now resident observer for Brookings Institution. He is located at Baton Rouge and has the States of Louisiana, Arkansas, Mississippi, and Tennessee.

Mr. M. H. Saunderson of the Montana Experiment Station is serving as a member of the Montana Corn-Hog Board of Review.

Dr. R. J. Saville has been acting as head of the Department of Agricultural Economics at Louisiana State University and doing part time teaching while Dr. Thompson has been on leave.

Mr. F. V. Smith, has joined the Purdue University Farm Management Department as research assistant during the leave of Mr. G. E. Young.

Mr. R. C. Smith has been appointed Secretary of the Production Credit Corporation at Louisville. Mr. Smith is on leave of absence from the Department of Rural Economics, Ohio State University.

Dr. T. Lynn Smith, Rural Socialist in the Department of Agricultural Economics, Louisiana State University, has been State Supervisor for research projects of the Emergency Relief Administration. Dr. Smith will devote one half time during the coming year to research work and will continue his study of population problems in Louisiana.

Dr. R. L. Thompson, head of the Department of Economics, has been on leave from Louisiana State University from October 1 until May 1 with the Farm Credit Administration as Field Organizer, and since May 1 with the Agricultural Adjustment Administration as Regional Director, Division of Program Planning of the Land Policy Section.

Professor F. L. Thomsen of the Department of Agricultural Economics, University of Missouri, who has been loaned to the Agricultural Adjustment Administration as adviser to the Corn-Hog Section, has had his leave extended until September 1.

Mr. Robert B. Tootell has resigned as extension land economist in the Department of Agricultural Economics, Montana State College, to head the research work of the Federal Land Bank at Spokane, Washington.

Mr. George W. Westcott, formerly of the extension service, Iowa State College, is now extension professor of agricultural economics at Massachusetts State College, succeeding Mr. Harold B. Rowe.

Professor Rex E. Willard, head of the Division of Farm Management and Agricultural Economics, State College of Washington, has been granted leave of absence for one year, beginning May 15, 1934, to assume the position of regional director of the Pacific Northwest Planning Division with the Agricultural Adjustment Administration. His territory will include Washington, Oregon, and Idaho. His headquarters will be at the Agricultural Experiment Station at the State College at Pullman.

Mr. G. E. Young, research assistant in the Purdue University Farm Management Department, has been granted a year's leave of absence to serve as Agricultural Economist with the Bureau of Agricultural Economics, in the position of State Project Director of the Land Policy Section of the Agricultural Adjustment Administration. He will assist in the formulation of a land utilization policy for Indiana as well as continue his economic study of submarginal areas within the state.